F2X64(RTU) Series User Manual

The user manual is suitable for the following model:

Model	Product Type
F2164	GPRS RTU
F2264	CDMA RTU

Four-Faith

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A1 A2 A3 A4 A5 A6 A7 A8 AG
V8 V7 V6 V5 V4 V3 V2 V1
SIM/UIM
Online ACT Power

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Chapter 1 Brief Introduction of Product

1.1 General

F2x64 series is wireless Remote Terminal Unit(abbreviation: RTU). It has multiple functions (analog input、digital input、digital output、pulse counting and wireless data communication, etc).

It adopts high-powered industrial 32 bits MCU and embedded real time operating system. It supports RS232 and RS485 (or RS422) port that can conveniently and transparently connect devices to a cellular network, Easy to make your existing devices connect to network just with basic configurations. It has low power consumption work mode in which the power consumption could be 1ower than 1mA@12VDC. It has compatible digital I/O channel, ADC, input pulse counter and pulse wave output functions.

It has been widely used in M2M fields, such as intelligent transportation, smart grid, industrial automation, telemetry, finance, POS, water supply, environment protection, post, weather, and so on.

1.2 Features and Benefits

Design for Industrial Application

- High-powered industrial cellular module
- High-powered industrial 32 bits MCU
- Support low power consumption mode, including multi-sleep and trigger modes to reduce the power dissipation farthest
- Embedded Real Time Clock(RTC) circuit which can realize timing online/offline function
- Housing: iron, providing IP30 protection.
- Power range: DC 5~35V

Stability and Reliability

- Support hardware and software WDT
- Support auto recovery mechanism, including online detection, auto redial when offline to make it always online
- RS232/RS485/RS422 port: 15KV ESD protection
- SIM/UIM port: 15KV ESD protection
- Power port: reverse-voltage and overvoltage protection

- Antenna port: lightning protection(optional)

Standard and Convenient

- Adopt terminal block interface, convenient for industrial applications
- Support standard RS232 and RS485(or RS422) port that can connect to serial devices directly
- TTL logic level RS232 interface can be customized
- Support intellectual mode, enter into communication state automatically when powered on
- Provide management software for remote management
- Support several work modes
- Convenient configuration and maintenance interface

High-performance

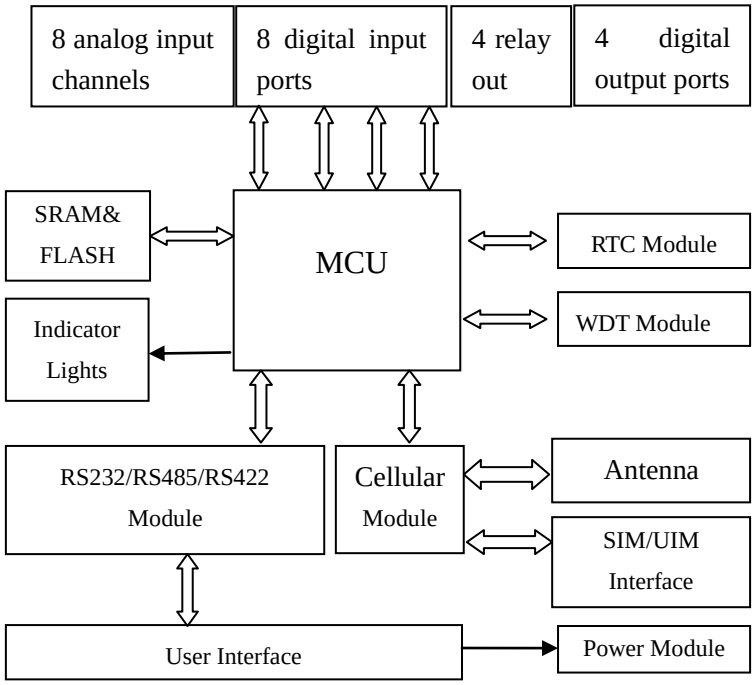
- 8 analog input channels（resolution：16bit）Input voltage（0-5V）,Input current（0-20mA）, Sampling rate(1.365kSPS).
- 4 relay outputs（5A/30VDC,5A/250VAC）.
- 4 optocoupler isolated digital outputs（10mA）.
- 8 digital inputs（Voltage range：3.3V-24V）. one of these input ports can be configured as pulse counter function.
- 2MB SPI FLASH for data log.
- Support dual data centers, one main and another as backup
- Support multiple data centers , it can support maximum 5 data centers
- Support multi-center multi-function(for example: one data center is MODBUS RTU protocol function, another data center is RTU extended protocol function)
- Support multiple online trigger ways, including SMS, ring and data. Support link disconnection when timeout
- Support dynamic domain name(DDNS) and IP access to the data center
- Support RS232/RS485 MODBUS RTU protocol.
- Support TCP MODBUS RTU protocol using TCP2COM software that converts TCP to virtual serial port.
- Support 8 digital inputs and 8 analog input manual query and automatic report.
- Support 4 optocoupler isolated output ports and 4 relay outputs controlled via MODBUS RTU protocol.
- Support pulse counter initiate value configurable, Its realtime value can be queried via MODBUS RTU protocol
- Support RTU extended protocol.
- Acquisition data(8 analog inputs and 8 digital inputs) is reported periodically via RTU extended RTU protocal.
- Support RTU extended protocol. Reporting mode can be selected. there are three reporting mode, including Network only, SMS only and Main network SMS backup(it uses SMS. when network connect fail)
- Support RTU extended protocol.When reporting acquisition data failure, acquisition data are saved to 2M byte SPI FALSH.
- Support RTU extended protocol. The data center can query acquisition data actively
- Support RTU extended protocol. It has counter function that the initial value of the timer is

set and the value of the timer is queried

- Support RTU extended protocol. It has the data center and RS232/RS485 transparent transmission function.
- Support RTU extended protocol. it has alarm function, alarm information is reported automatically(alarm trigger conditions can be configured independently).
- Support RTU extended protocol. Can remotely reboot RTU
- Support RTU extended protocol. Can remotely configure the parameters
- Support RTU extended protocol. The remote upgrading parameters can be configured, RTU support remote upgrade firmware.
- Alarm function: Alarm information are reported through RTU extended protocol , SMS, or both SMS and RTU extended protocol
- When alarm information are reported through SMS, alarm number and alarm content of each channel can be configured independently
- The remote upgrading parameters can be configured by SMS. RTU upgrade the firmware immediately when it received the upgrade command.
- Built-in industrial clock, the acquisition time can be recorded through this clock
- Network is automatically connected, when device power on. Network is automatically reconnected when network is offline.
- Scheduled turn on and turn off power function make the device work in low-power mode

1.3 Working Principle

The principle chart of the RTU is as following:



1.4 Specifications

Cellular Specification

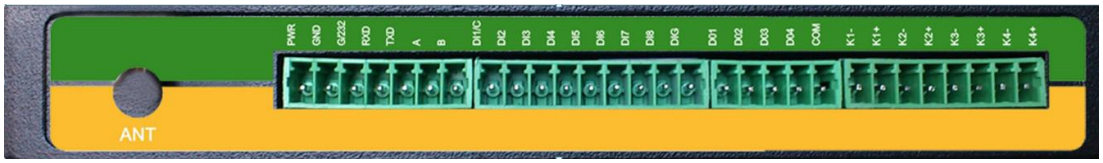
Standard and Band	Bandwidth	TX power	RX sensitivity
F2164 GPRS RTU			
EGSM900/GSM1800MHz, GSM850/900/1800/1900MHz(optional) Compliant to GSM phase 2/2+ GPRS class 10, class 12(optional)	85.6Kbps	GSM850/900： <33dBm GSM1800/1900： <30dBm	<-107 dBm
F2264 CDMA RTU			
CDMA2000 1xRTT 800MHz 800/1900MHz(optional) 450MHz(optional)	153.6Kbps	<30dBm	<-104 dBm

Hardware System

Item	Content
MCU	Industrial 32 bits CPU
FLASH	2MB（Extendable 8MB）
SRAM	512KB（Extendable 1MB）

Interface Type

Item	Content
Serial	1 RS232 port and 1 RS485port, 15KV ESD protection Data bits: 5, 6 ,7, 8 Stop bits: 1, 1.5, 2 Parity: none, even, odd, space, mark Baud rate: 110~230400 bps
Indicator	"Power", "ACT", "Online"
Antenna	Cellular: Standard SMA female interface, 50 ohm GPS: Standard SMA female interface, 50 ohm lighting protection(optional)
SIM/UIM	Standard 3V/1.8V user card interface, 15KV ESD protection
Power	Terminal block interface, reverse-voltage and overvoltage protection



Power Input

Item	Content
Standard Power	DC 12V/0.5A
Power Range	DC 5~35V

Power Consumption

Working States	Power Consumption
Communication	60mA@12VDC；118mA@5VDC
Standby	39mA@12VDC；73mA@5VDC
Timing Power Off	1.1mA@12VDC；1.1mA@5VDC

Physical Characteristics

Item	Content
Housing	Iron, providing IP30 protection
Dimensions	157x97x25 mm
Weight	500g

Environmental Limits

Item	Content
Operating Temperature	-25~+65℃（-13~+149℉）
Extended Operating Temperature	-30~+75℃（-22~+167℉）
Storage Temperature	-40~+85℃（-40~+185℉）
Operating Humidity	95% (Non-condensing)

Chapter 2 Installation Introduction

2.1 General

The RTU must be installed correctly to make it work properly.
Warning: Forbidden to install the RTU when powered on!

2.2 Encasement List

Name	Quantity	Remark
RTU host	1	
Cellular Antenna	1	
Power adapter	1	
RS232 data cable	1	optional
Terminal Block	1	5 pin
	1	7 pin
	1	8 pin
	2	9 pin
RS485 data cable	1	optional
Manual CD	1	
Certification card	1	
Maintenance card	1	

Table 2-1 Encasement List

2.3 Installation and Cable Connection

Dimension: (unit: mm)

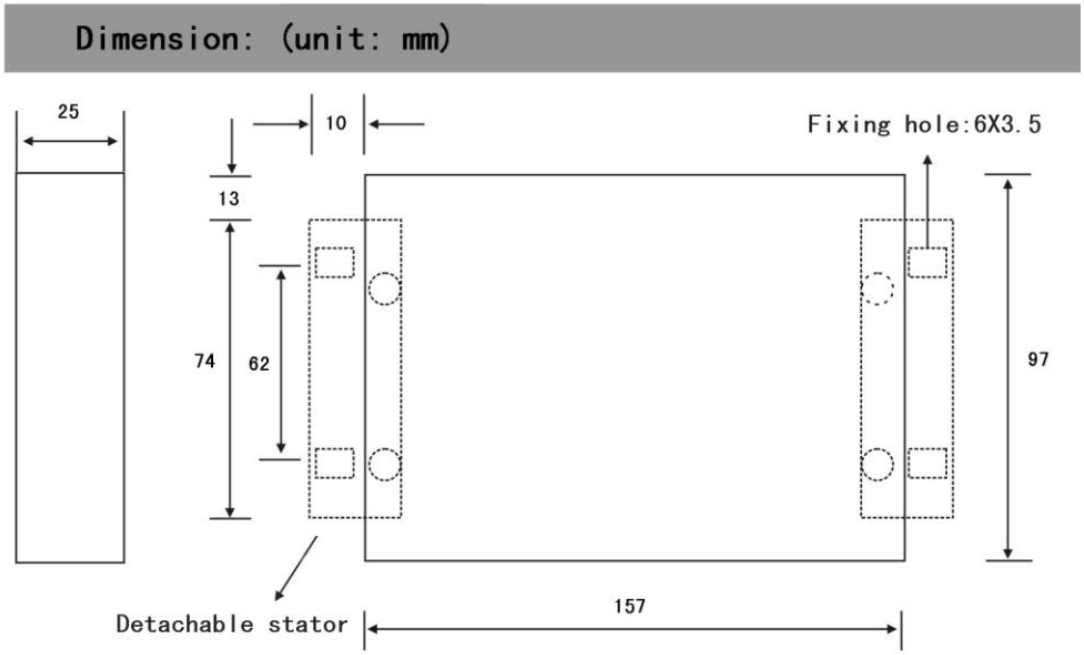


Figure 2-1 Installation Chart

Installation of SIM/UIM card:

Firstly power off the RTU, and press the out button of the SIM/UIM card outlet with a needle object. Then the SIM/UIM card sheath will flick out at once. Put SIM/UIM card into the card sheath (Pay attention to put the side which has metal point outside), and insert card sheath back to the SIM/UIM card outlet.

Warning: Forbidden to install SIM/UIM card when powered on!

Installation of antenna:

Screw the SMA male pin of the antenna to the female SMA outlet of the RTU tightly. Warning: The antenna must be screwed tightly, or the signal quality of antenna will be influenced!

User Interface Signal Definition

Pin Number	Function	Interface	Default function	Function expansion
1	Power	PWR	Power input positive	None
2		GND	Power input negative	None
3	RS232	G/232	RS232 GND	None
4		RXD	RS232 Data receiving	None
5		TXD	RS232 Date sending	None
6	RS485	A	RS485 positive	Reserved for compatible RS232 DTR
7		B	RS485 negative	Reserved for compatible RS232 DSR

8	Digital Input	DI1/C	Digital input1	Counting function
9		DI2	Digital input 2	None
10		DI3	Digital input 3	None
11		DI4	Digital input 4	None
12		DI5	Digital input 5	None
13	Digital Input	DI6	Digital input 6	None
14		DI7	Digital input 7	None
15		DI8	Digital input 8	None
16		DIG	Digital input GND	None
18	Optocoupler output	DO1	Optocoupler output1	None
19		DO2	Optocoupler output 2	None
20		DO3	Optocoupler output 3	None
21		DO4	Optocoupler output 4	None
22		COM	COM GND	None
23	Relay output	K1-	Relay output 1-	None
24		K1+	Relay output 1+	None
25		K2-	Relay output 2-	None
26		K2+	Relay output 2+	None
27		K3-	Relay output 3-	None
28		K3+	Relay output 3+	None
29		K4-	Relay output 4-	None
30		K4+	Relay output 4+	None
31	ADC	A1	ADC1	None
32		A2	ADC 2	None
33		A3	ADC 3	None
34		A4	ADC 4	None
35		A5	ADC 5	None
36		A6	ADC 6	None
37		A7	ADC 7	None
38		A8	ADC 8	None
39		AG	AGND	None

Installation of cable:

F2X64 adopts industrial terminal block interface. The recommendatory cable is 28-16AWG.

The detail description of standard layout adapter and communication cables as following:

Adapter（Rating Output 12VDC/0.5A）:

Cable Color	Power Output Polarity

Black &White Alternate	Anode
Black	Cathode

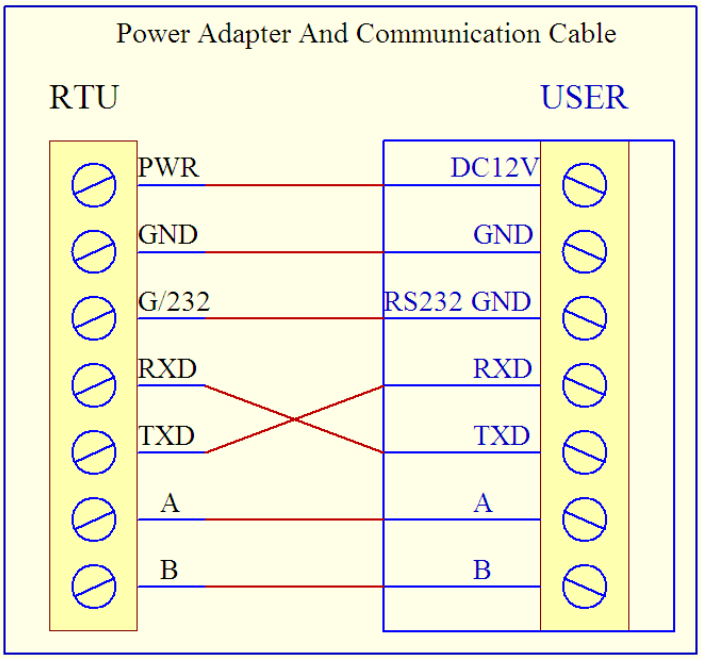
RS232 Cable：

Cable Color	Corresponding DB9-M Pin Number
Brown	Pin 2
Blue	Pin 3
Black	Pin 5

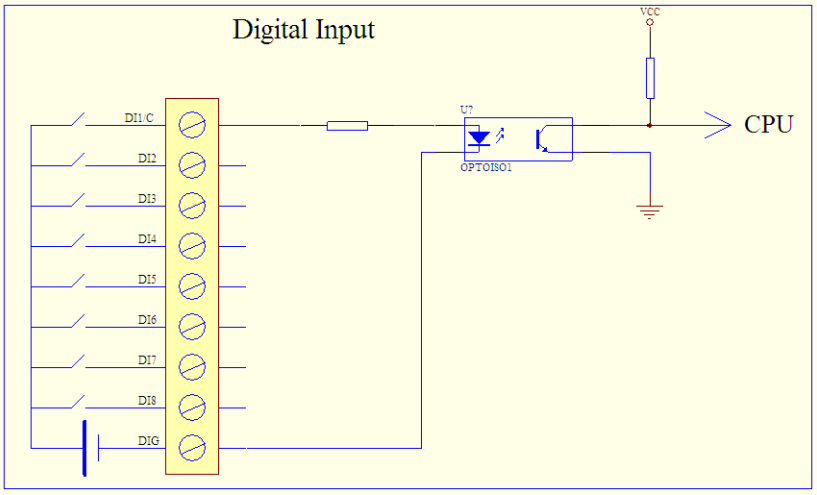
RS485 Cable：

Cable Color	Signal definition
Red	RS485(A)
Black	RS485(B)

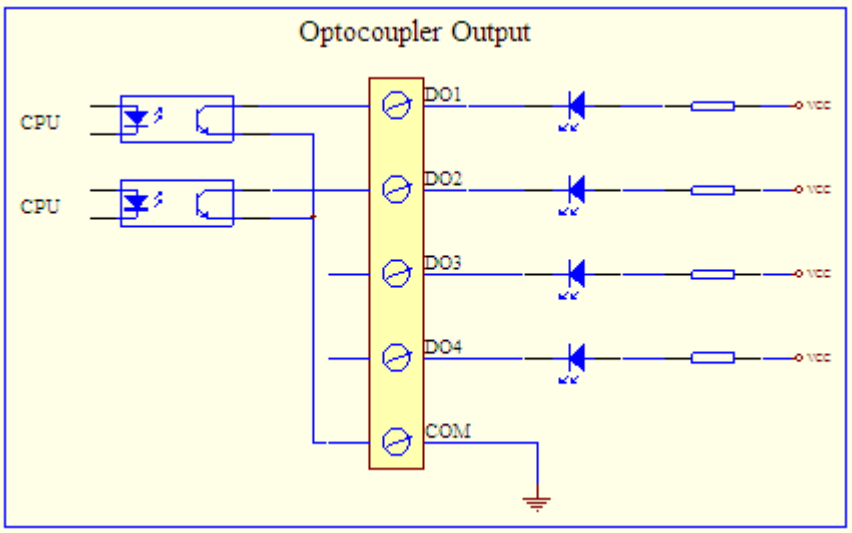
Power adapter and communication cable connection chart as following:



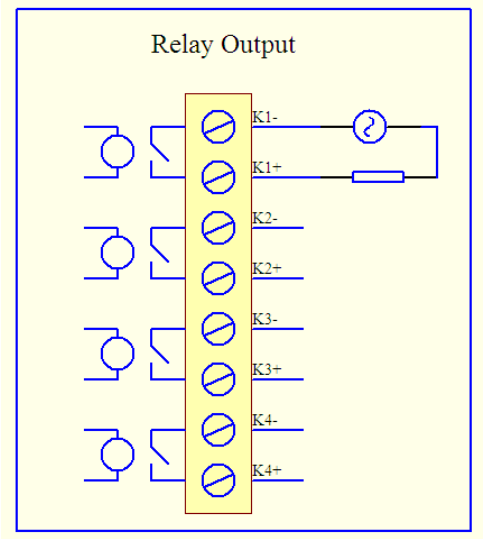
Digital Input cable connection



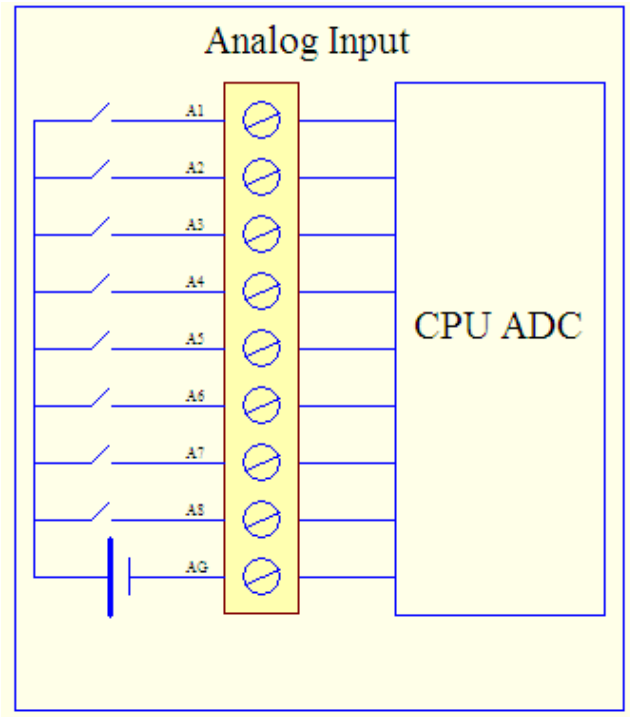
Optocoupler output cable connection



Relay output cable connection



ADC cable connection



2.4 Power

The power range of the RTU is DC 5~35V

Warning: When use other power, Please make sure that the power can supply power above 4W.

We recommend user to use the shipped standard DC 12V/0.5A power adaptor.

2.5 Indicator Lights Introduction

The RTU provides three indicator lights: “Power”, “ACT”, “Online”.

Indicator Light	State	Introduction
Power	ON	RTU is powered on
	OFF	RTU is powered off
ACT	BLINK	Data is communicating
	OFF	No data
Online	ON	RTU connected to the mobile network
	OFF	RTU does not connected to the mobole network

Chapter 3 RTU Function Introduction

RTU is based on our ip modem which has realized data transparent transmission. It can collect analog signal and digital signal. It also can output digital signal including 4 optocoupler isolated outputs and 4 relay outputs. It has pulse counter. Main funcions as following:

1. Support dual data centers, one main and another backup, support multiple data centers and it can support maximum 5 data centers, support multi-center multi-function(for example: one data center works with MODBUS RTU protocol , another data center can work with RTU extended protocol)
2. support multi online trigger ways, including SMS, ring and data. Support link disconnection when timeout
3. Network is automatically connect,when device offline, it will automatically reconnect.
4. Support RS232/RS485 MODBUS RTU protocol, support TCP MODBUS RTU protocol using TCP2COM software that converts TCP to virtual serial port.
5. Alarm function: Alarm information are reported through RTU extended protocol , SMS, or both SMS and RTU extended protocol
6. Multiple configure methods.
7. Local and remote upgrade firmware.
8. Scheduled turn on and turn off power function make the device work in low-power mode

3.1 Multiple servers funticon

RTU support multi-center multi-function. Each center functions can be configured independently, parameter settings please refer to 4.1.4.6 Data Service Center Settings. Connection protocol please refer to 4.1.4.7 Work Mode.

3.2 MODBUS protocol

RTU support RS232/RS485 MODBUS RTU protocol. The principle of TCP MODBUS RTU protocol is the same as RS232/RS485 MODBUS RTU protocol. TCP2COM softwave we provided realize TCP to virtual serial port function(it can remotely transfer MODBUS RTU protocol). The following introduces MODBUS RTU protocol, All of the following MODBUS data are high byte first (big-endian mode).

3.2.1 MODBUS settings

Enable MODBUS function, related settings please refer to 4.1.4.5 ModBus Setting, it also need to configure the digital input, digital output, analog input and counter input independently.

3.2.2 TCP2COM description

TCP2COM softwave realize TCP to virtual serial port function. The principle of TCP MODBUS RTU protocol is the same as RS232/RS485 MODBUS RTU protocol. About using TCP2COM softwave, please refer to 5.1 TCP2COM Manual.

3.2.3 MODBUS digital IO input introduction

The MODBUS function code of digital IO input is 0x02(read input status), the starting register address is 0, there are total 8 digital input(register address from 0 to 7). The MODBUS settings of digital IO input please refer to 4.1.4.1 Digital input function.

Eg:

Query all digital input ports (all 8 input ports), command as following:

01 02 00 00 00 08 79 CC

Parse command:

Byte-orders	1	2	3	4	5	6	7	8
Content	01	02	00	00	00	08	79	CC
Parsing	Slave Address	Function code	Start address		number of registers		Checksum	
Meaning	01	Read input status	Address is 0-7 corresponding to IO1-IO8 seperately。		Read the value of digital IO input. This example read 8 ports . If read one channel, this parameter should be 0001		checksum	

Response

01 02 01 00 A1 88

Parse response:

Byte-orders	1	2	3	4	5	6
Content	01	02	01	00	A1	88
Parsing	Slave Address	Function code	Data length	IO status value	Checksum	
Meaning	01	Read input statuss	Data length	IO status value, bit0~bit7	checksum	

				corresponding to IO1-IO8	

3.2.4 MODBUS digital IO output introduction

The MODBUS function code of digital IO output is 0x05, the starting address is 0, there are total 8 output ports(address 0-3 used for optocouplers output ports, corresponding to optocouplers port 1-4, address 4-7 used for relay outputs,corresponding to rlay output 1-4). The MODBUS configuration of digital IO output please refer to 4.1.4.2 Optocoupler and relay settings.

Eg:

Control one digital IO output, command as following:

01 05 00 00 FF 00 8C 3A

Parse command:

Byte-orders	1	2	3	4	5	6	7	8
Content	01	05	00	00	FF	00	8C	3A
Parsing	Slave Address	Function code	Start address		Output value：FF00 means logic 1，0000 means logic 0.		checksum	
Meaning	01	Force single coil	Address is 0-3 used for optocouplers output, address 4-7 used for relay outputs		The digital output value.		checksum	

Response

01 05 00 00 FF 00 8C 3A

Parse response:

The response command is the same as sending command, please refer to the above control command.

3.2.5 MODBUS counter introduction

The counter input port and the first channel of digital IO input is the same pin.

The MODBUS function code of reading counter value is 0x03(read holding register), the starting address is 0. The MODBUS function code of setting counter initial value is 0x10(preset multiple registers), the starting address is 0. The MODBUS parameters of counter please refer to 4.1.4.4 RTU counter settings.

Eg:

Read counter value, command as following:

01 03 00 00 00 02 C4 0B

Parse command:

Byte-orders	1	2	3	4	5	6	7	8
Content	01	03	00	00	00	02	C4	0B
Parsing	Slave address	Function code	Start address		number of Registers		checksum	
Meaning	01	Read holding register	Address 0 corresponding to counter		Counter value is a 32 bit value,so, need to read two 16 bit regiesters		checksum	

Response

01 02 01 00 A1 88

Parse response:

Byte-orders	1	2	3	4	5	6	7	8
Content	01	03	00	00	00	02	C4	0B
Parsing	Slave address	Function code	High 16 bits of the value		Low 16 bits of the value		Checksum	
Meaning	01	Read holding register	Corresponding to high 16 bits of counter value		Correspondint to low 16 bits of counter value		checksum	

Set counter initial value, command as following:

01 10 00 00 00 02 04 00 00 00 0A 73 A8

Parse command:

Byte-orders	1	2	3	4	5	6	7	8	9
Content	01	10	00	00	00	02	04	00	00
Parsing	Slave address	Function code	Start address		Number of Registers		c	High 16 bits value	
Meaning	01	Preset multiple registers	Address 0 corresponding to counter		Counter value is 32 bits, so need to write two 16 bits registers		Byte count	Correspond to high 16 bits of counter value	

Contiune

10	11	12	13

00	0A	73	A8
Low 16 bits value		Checksum	
Correspond to low 16 bits of counter value		checksum	

Response
01 10 00 00 00 02 41 C8
Parse response:

Byte-orders	1	2	3	4	5	6	7	8
Content	01	10	00	00	00	02	41	C8
Parsing	Slave Address	Function code	Start address		number of registers		Checksum	
Meaning	01	Preset multiple registers	Address 0 corresponding to counter		Counter value is 32 bits, so need to operate two 16 bits registers		checksum	

3.2.6 MODBUS analog input introduction

The MODBUS function code of analog input is 0x04(read input register), the starting address is 0, there are total 8 channels (the value of each channel is a signed 32-bit data, this data is the actual value of the sensor). The MODBUS parameters of analog input please refer to 4.1.4.3 Analog input function.

Query all channels(all 8 channels) of analog input, command as following:
01 04 00 00 00 10 F1 C6
Parse command:

Byte-orders	1	2	3	4	5	6	7	8
Content	01	04	00	00	00	10	F1	C6
Parsing	Slave Address	Function code	Start Address		number of registers		Checksum	
Meaning	01	Read input register	Address 0000-0010 correspond to AIN1-AIN8		Analog input value is 32 bits, high 16 bits first. If read one channel, this parameter should be 0002		checksum	

Response
01 04 20 00 00 01 82 00 00 00 0C 00 00 00 0C 00 00 00 0C 00 00 00 0C 00 00 00 0C 00 00 00 0C 00 00 00 0C

00 00 00 0C B0 A2

Parse response:

Byte-orders	1	2	3	4	5	6	7
Content	01	04	20	00	00	01	82
Parsing	Slave address	Function code	Data length	Data 1		Data 2	
Meaning	01	Read input register	Byte count	Corresponding to high 16 bits of first channel value. Te value of each channel is a signed 32-bit data		Corresponding to low 16 bits of first channel value. Te value of each channel is a signed 32-bit data	

continue

8	9	10	11	…	32	33	34	35	36	37
00	00	00	0C	…	00	00	00	0C	B0	A2
Data 3		Data 4		…	Data 15		Data 16		Checksum	
Corresponding to high 16 bits of second channel value. Te value of each channel is a signed 32-bit data		Corresponding to low 16 bits of second channel value. Te value of each channel is a signed 32-bit data		…	corresponding to high 16 bits of eighth channel value. Te value of each channel is a signed 32-bit data		corresponding to low 16 bits of eighth channel value. Te value of each channel is a signed 32-bit data		checksum	

3.3 RTU extended protocol

RTU extended protocol has the following main functions:

1. Acquisition data(including analog input and digital input) are reported periodically.
2. Reporting mode can be selected. there are three reporting modes, including Network only, SMS only and Main network ,SMS as backup(it uses SMS. when network connection fail)
3. When reporting acquisition data failure, acquisition data are saved to 2M byte SPI nonvolatile flash which is saved forever even if the device powered off.
4. The data center can query acquisition data actively
5. It has counter function that the initial value of the counter can be configured, its realtime value can be queried
6. It provede the transparent transmission tunnel between the data center and the terminal devices which connected to the RTU RS232/485 port. This function works same as our company's ip modem.

7. It has alarm function and the alarm information can be reported periodically(alarm trigger conditions can be configured independently).
8. It can be controlled to reboot from the remote side.
9. support remote configure the parameters
10. Local and remote upgrade the firmware.

Please refer to 5.2 RTU center service.

3.4Alarm function

Alarm informations can be reported through RTU extended protocol only, SMS only and both SMS and RTU extended protocol. When alarm informations are reported through SMS, alarm phone number and alarm content of each channel can be configured independently. detail description please refer to 5.2.7 Alarm information.

3.5 Multiply configure parameters

All the RTU parameters can be configured through RS232/RS485、SMS and RTU extended protocol. Please refer to chapter 4 configuration.

3.6 Remote upgrade firmware

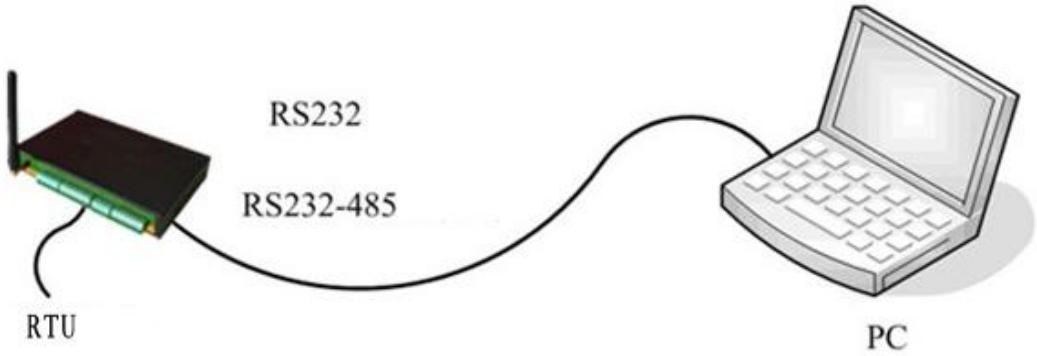
RTU can remote upgrade firmware through TCP or UDP. First put new firmware (the version should higher than the current software version) on RTU center software(its manual refer to 5.2 RTU center service) installation directory. then, configure upgraded parameters, these parameters can be configured by SMS or RTU extended protocol. When RTU received the valid upgrade parameters, it will upgrade the firmware automatically. Detail settings please refer to 4.2.2.2 Overall setting by SMS or 5.10 Remote configure.

Chapter 4 Configuration

All the RTU settings can be configured through RS232/RS485、SMS and RTU extended protocol.

4.1 RS232/RS485 Configuration

Before configuration, It's necessary to connect the RTU with the configure PC by the shipped RS232 or RS232-485 cable as following.



4.1.1 Configuration introduction

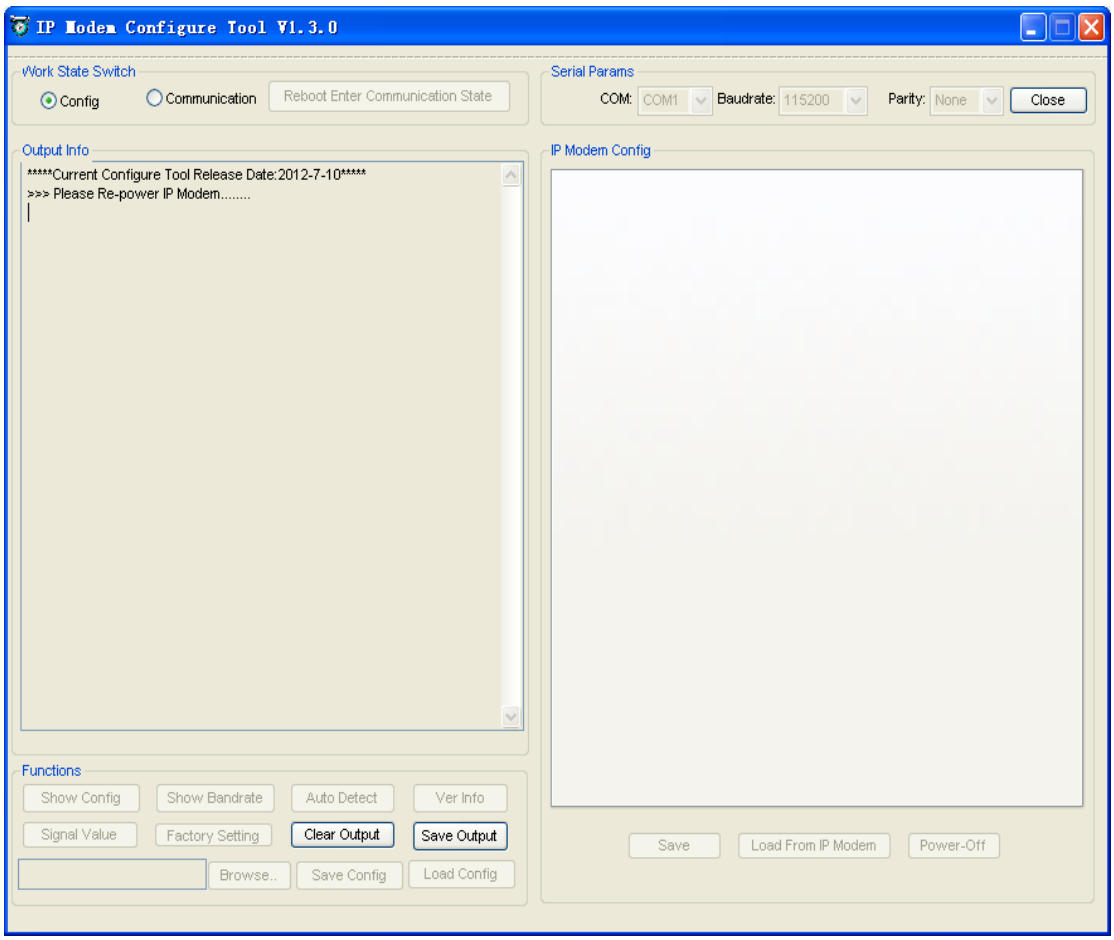
There are two ways to configure the RTU:

Configuration software tool: All the settings are configured through the shipped software tool. It's necessary to have one PC to run this tool.

Extended AT command: All the settings are configured through AT command, so any device with serial port can configure it. Before configuration with extended AT command, you should make RTU enter configure state. The steps how to make RTU enter configure state, please refer to appendix.

The following describes how to configure RTU with the configure software tool. At the same time, it gives out the corresponding AT command of each configuration item.

4.1.2 Run the configure tool

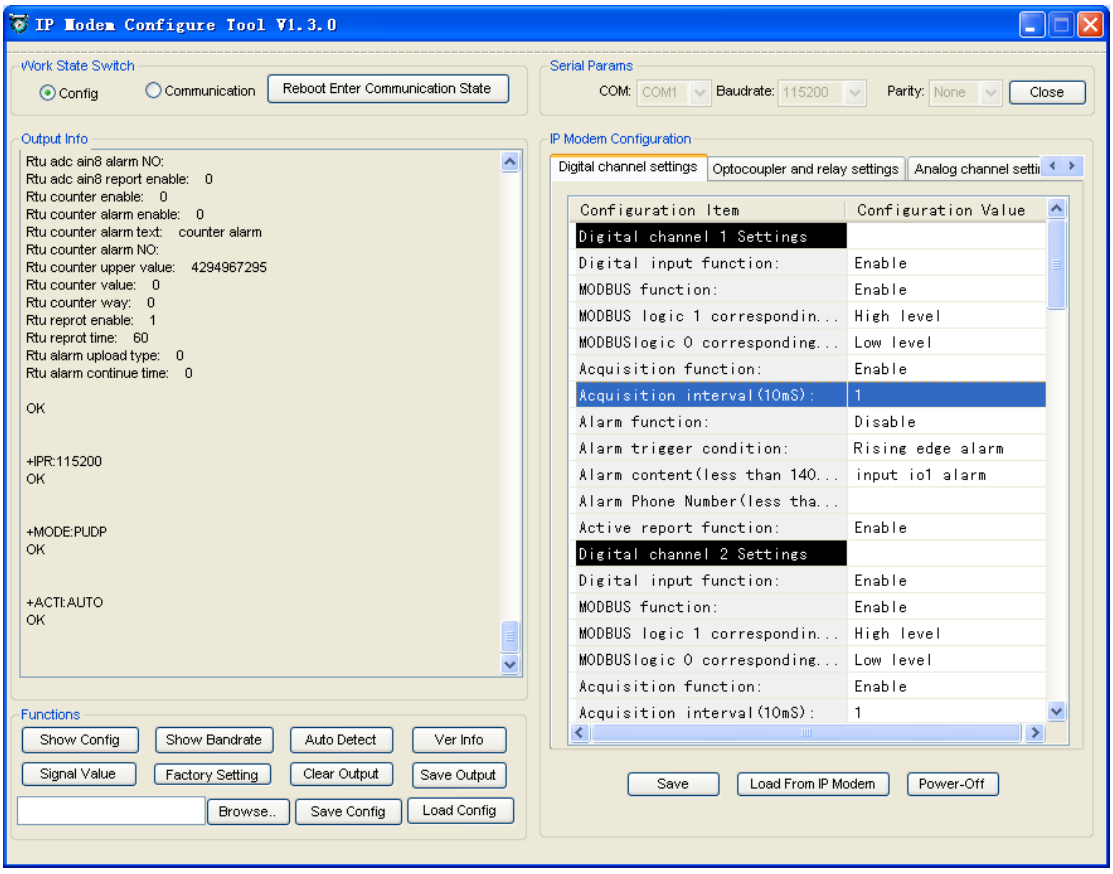


The “Serial Parameters” column shows the current serial port settings. To configure RTU, please choose the correct serial port which connects to RTU, and the baud-rate is 115200 with no parity, then open the serial port. If the button text is“Close”, it shows the serial port now has been opened. If the text is “Open”, you should open the port first. When the port opened, the “Output Info” column will display

“Port(COM1) Has Opened，Please Re-Power the RTU,

Waiting RTU Enter Configure State...”

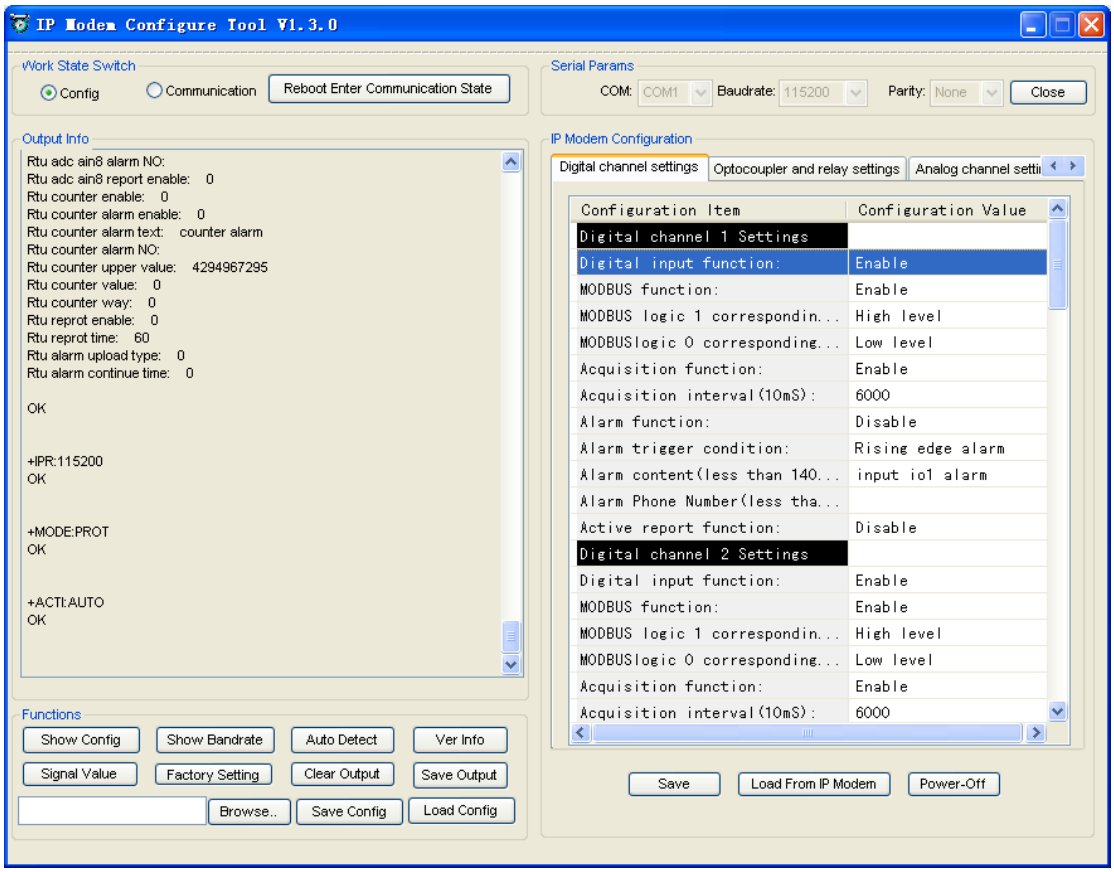
4.1.3 Re-power RTU



After Re-power RTU, The configure tool will make it enter configure state. At the same time, the software will load current settings from RTU and displays on the right configure columns. It's now ready to configure.

4.1.4 Configuration

4.1.4.1 Digital channel settings



All the RTU digital input settings are configured in this page. Counter and digital input channel 1 are the same pin, Therefore two functions can not be enabled at the same time.

◆ Digital input function

"Digital input function" is the global key of digital input enable or disable. Disable this item will make the digital input channel functions not work.

Command: AT+RTUINIOENy=x

Explanation: enable or disable switch of digital input

Parameter: y range 1~8, Corresponding to digital input channel 1 ~ 8. x range 0~1，0 means disable，1 means enable.

Example: AT+RTUINIOEN1=1

◆ MODBUS function

"MODBUS function" control digital input MODBUS function. The digital input channel returns a fixed 0 when MODBUS query when disable this item.

Command: AT+RTUINIOMBENy=x
Explanation: MODBUS fuctions of digital input
Parameter: y range 1~8, corresponding to digital input channel 1~8. x range 0-1，0 means disable，1 means enable.
Example: AT+RTUINIOMBEN1=1

◆ Acquisition function

This function includes alarm function and active report function.

Command: AT+RTUINIOGETENy=x
Explanation: control acquisition function.
Parameter: y range 1~8, corresponding to digital input 1 ~ 8 channel. x range 0-1，0 means disable，1 means enable.
Example: AT+RTUINIOGETEN1=1

◆ Acquisition interval

This parameter determines the digital input acquisition cycle, The unit is 10ms (milliseconds) .
Eg:
60 seconds: this parameter should be 6000.

Command: AT+RTUINIOTIMEy=x
Explanation: set acquisition interval.
Parameter: y range 1~8, corresponding to digital input channel 1~8. x range 0-4294967295，0 means 10ms.
Example: AT+RTUINIOTIME1=6000

◆ Alarm function

"Alarm funcion" enable or disable alarm function.

Command: AT+RTUINIOLRMENy=x

Explanation: control alarm function.

Parameter: y range 1~8, corresponding to digital input channel 1~8. x range 0-1，0 mean disable, 1 means enable.

Example: AT+RTUINIOLRMEN1=0

◆ Alarm trigger condition

It will alarm if digital input match this condition.

Command: AT+RTUINIOLRMOPy=x

Explanation: alarm tigger conditon.

Parameter: y range 1~8, corresponding to digital input channel. x range 0~4，0 means low level, 1 means high level, 2 means rising edge, 3 means falling edge, 4 means both edge.

Example: AT+RTUINIOLRMOP1=0

◆ Alarm content

Alarm SMS content configuration

Command: AT+RTUINIOLRMTXTy=xxx

Explanation: set alarm content.

Parameter: y range 1~8, corresponding to digital input channel 1~8. xxx means alarm content(<=140 bytes).

Example: AT+RTUINIOLRMTXT1= input io1 alarm

◆ Alarm phone number

When RTU alarm, it will send sms to configured phone numbers.

Command: AT+RTUINIOADDLRMNOy=xxx

Explanation: add alarm phone number.

Parameter: y range 1~8, corresponding to digital input channel 1~8. xxx means alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: AT+RTUINIOADDLRMNO1=13912345678,13812345678

Command: AT+RTUINIOSETLRMNOy=xxx

Explanation: set alarm phone number, The old alarm phone numbers will be overwrited when use this command.

Parameter: y range 1~8, corresponding to digital input channel 1~8. xxx means alarm

phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: AT+RTUINIOSETLRMNO1=13912345678,13812345678

Command: AT+RTUINIODELLRMNOy=xxx

Explanation: delete alarm phone number, it delets this number from the current alarm numbers.

Parameter: y range 1~8, corresponding to digital input channel 1~8. xxx means alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: AT+RTUINIODELLRMNO1=13912345678,13812345678

◆ Active report function

It controls active report function of digital input ports.

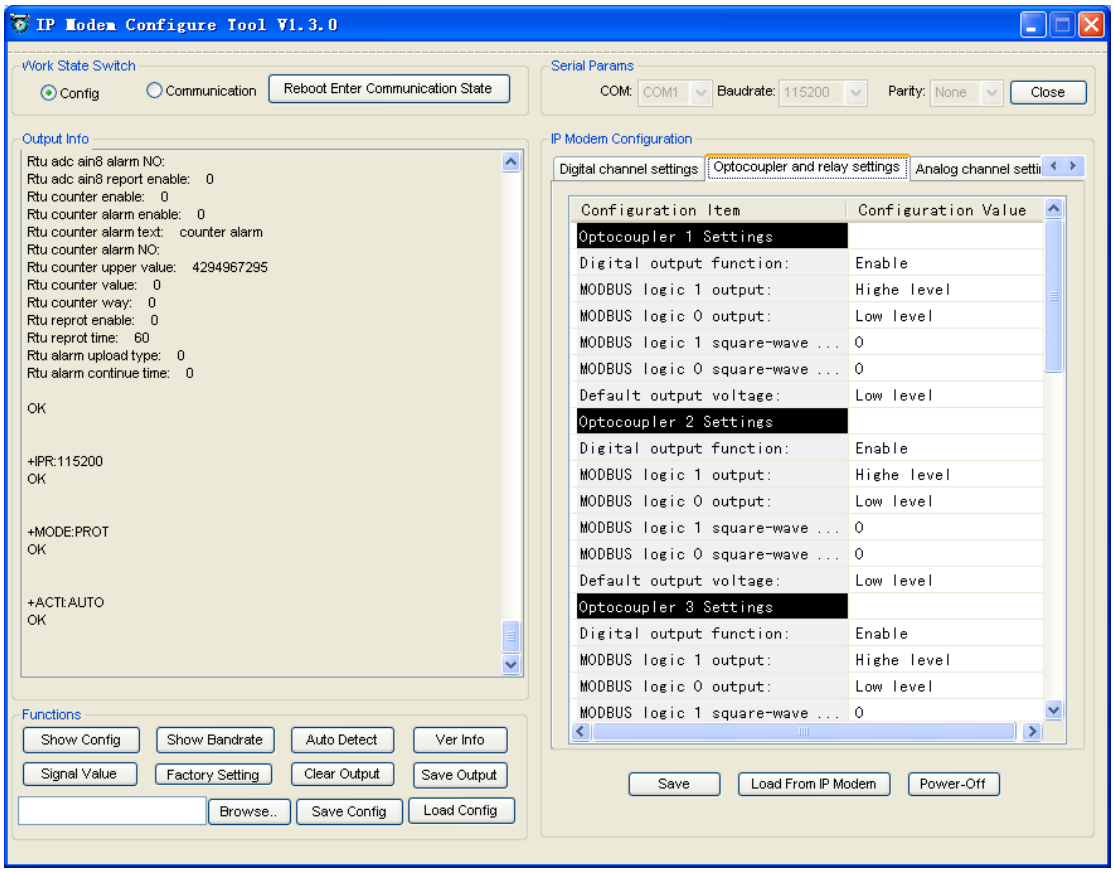
Command: AT+RTUINIOREPORTENy=x

Explanation: active report function.

Parameter: y range 1~8, corresponding to digital input channel 1~8. x range 0-1，0 means disable, 1 means enable.

Example: AT+RTUINIOREPORTEN1=0

4.1.4.2 Optocoupler and relay settings



◆ Digital output function

It controls digital output ports(4 optocouplers ports and 4 relay outputs). Its function includes MODBUS control and RTU extended protocol control.

Command: AT+RTUOUTIOENy=x

Explanation: digital output function.

Parameter: y range 1~8, corresponding to digital output channels(1~4 corresponding to optocouplers channel 1~4, 5~8 corresponding to relay outputs 1~4). x range 0-1，0 means disable，1 means enable.

Example: AT+RTUOUTIOEN1=1

◆ MODBUS logic 1 output

Please refer to 3.1.4 MODBUS digital output, Register value FF00 means logic 1. This item configure digital output status when outputting logic 1.

Command: AT+RTUOUTIOONEy=x

Explanation: MODBUS logic 1 output.

Parameter: y range 1~8, corresponding to digital output channels(1~4 mean optocouplers channel 1~4, 5~8 corresponding to relay outputs 1~4).

Optocouplers output: x range 0-5，0 means low level，1 means high level. 2 means rising edge, 3 means falling edge, 4 means both edge. 5 means square wave.

Relay output: x range 0-1，0 mean disconnet，1 mean connect.

Example: AT+RTUOUTIOONE1=1

◆ MODBUS logic 0 output

Please refer to 3.1.4 MODBUS digital output, register 0000 mean logic 0. This item configure digital output status when outputting logic 0.

Command: AT+RTUOUTIOZEROy=x

Explanation: MODBUS logic 0 output.

Parameter: y range 1~8, corresponding to digital output channels(1~4 mean optocouplers channel 1~4, 5~8 corresponding to relay outputs 1~4).

Optocouplers output: x range 0-5，0 means low level，1 means high level. 2 means rising edge, 3 means falling edge, 4 means both edge. 5 means square wave.

Relay output: x range 0-1，0 mean disconnet，1 mean connect.

Example: AT+RTUOUTIOZERO1=1

◆ MODBUS logic 1 square-wave cycle

This item configure square wave cycle when MODBUS logic 1 is configured as square wave output. The unit is 20ms(milliseconds). for expamle: 50 means 50 * 20ms = 1s(seconds).

Command: AT+RTUOUTIOONEFREQy=x

Explanation: MODBUS logic 1 square wave cycle.

Parameter: y range 1~4, corresponding to digital output channels(1~4 corresponding to optocoupler ports 1~4). x range 0-4294967295.

Example: AT+RTUOUTIOONEFREQ1=50

◆ MODBUS logic 0 square-wave cycle

This item configure square wave cycle when MODBUS logic 0 is configured as square wave output. The unit is 20ms(milliseconds). for expamle: 50 means 50 * 20ms = 1s(seconds).

Command: AT+RTUOUTIOZEROFREQy=x

Explanation: MODBUS logic 0 square wave cycle.

Parameter: y range 1~4, corresponding to digital output channels(1~4 corresponding to optocoupler ports 1~4). x range 0-4294967295.

Example: AT+RTUOUTIOZEROFREQ1=50

◆ Default output voltage

It controls default output voltage level when RTU powered on.

Command: AT+RTUOUTIODEFVALy=x

Explanation: set default output voltage.

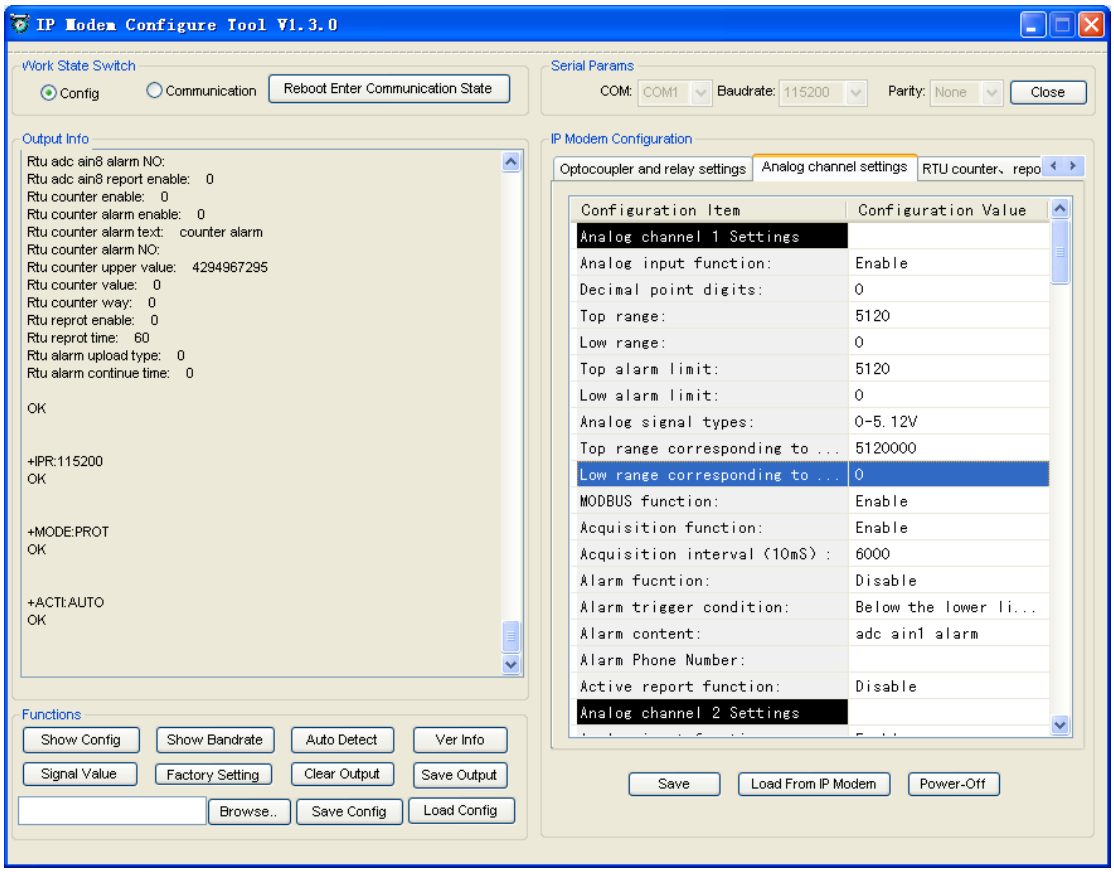
Parameter: y range 1~8, corresponding to digital output channels(1~4 means optocoupler channel 1~4, 5~8 means relay output 1~4).

Optocoupler output: x range 0-1，0 means low level，1 means high level.

relays: x range 0-1，0 means disconnet，1 means connect.

Example: AT+RTUOUTIODEFVAL1=1

4.1.4.3 Analog channel settings



◆ Analog input function

Enable or disable analog input function.

Command: AT+RTUADCENy=x

Explanation: enable or disable analog iput function.

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0-1，0 means disable，1 means enable.

Example: AT+RTUADCEN1=1

◆ Set sensor range

For example: There is a temperature sensor that the measuring range is -40.5 ~ 50.5 ℃ and output votage 1.3 ~ 4.5V. This sensor connect to RTU fisrt analog input channel. The decimal point of the data is three. temperature that is higher than 39.9℃ lower than -20.5℃ should alarm. The parameter settings should as following.

Decimal point digits:	3
Top range:	50500
Low range:	-40500
Top alarm limit:	39900
Low alarm limit:	-20500
Analog signal types:	0-5.12V
Top range corresponding to ...	4500000
Low range corresponding to ...	1300000
MODBUS function:	Enable
Acquisition function:	Enable
Acquisition interval (10mS) :	60
Alarm fucntion:	Enable
Alarm trigger condition:	Not Between lower limi

The range settings and alarm limit settings should take care of the decimal point digits setting. "Analog signal types" used for configure analog signal type(voltage or current). If the type is voltage, "Top range corresponding to voltage(uV) or Current output (nA)" is 4500000, This means 4500000uV = 4.5V, "Low range corresponding to voltage(uV) or Current output (nA)" is the same. If the type is current, "Top range corresponding to voltage(uV) or Current output (nA)" is 4500000, This means 4500000nA = 4.5mA, "Low range corresponding to voltage(uV) or Current output (nA)" is the same.

Command: AT+RTUADCDECIMALy=x

Explanation: set the number of decimal point.

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0-255，number of decimal point, 0 mean no decimal point, 1 mean one decimal point.

Example: AT+RTUADCDECIMAL1=0

Command: AT+RTUADCFULLVALy=x

Explanation: set top range(the value can be negative).

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range -2147483648 to 2147483647，this value related to the decimal point.

Example: AT+RTUADCFULLVAL1=100

Example: AT+RTUADCFULLVAL1=-100

Command: AT+RTUADCZEROVALy=x

Explanation: set low range(the value can be negative).

Parameter: y range 1~8, corresponding to input channel 1~8. x range -2147483648 to 2147483647，its value related to the decimal point.

Example: AT+RTUADCZEROVAL1=100

Example: AT+RTUADCZEROVAL1=-100

Command: AT+RTUADCLOWERVALy=x

Explanation: set low alarm limitation(the value can be negative).

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range -2147483648 to 2147483647，its value related to the decimal point.

Example: AT+RTUADCLOWERVAL1=100

Example: AT+RTUADCLOWERVAL1=-100

Command: AT+RTUADCUPPERVALy=x

Explanation: set top alarm limitation(the value can be negative).

Parameter: y range 1~8,corresponding to analogl input channel 1~8. x range -2147483648 to 2147483647，its value related to the decimal point.

Example: AT+RTUADCUPPERVAL1=100

Example: AT+RTUADCUPPERVAL1=-100

◆ Set sensor voltage or current output

Analog signal types:	0-5.12V
Top range corresponding to ...	4500000
Low range corresponding to ...	1300000

Please refer to “Set sensor range”.

Command: AT+RTUADCINTYPEy=x

Explanation: set the analog signal input type(voltage or current).

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0-1，0 means 0-5.12V,the type is voltage, 1 means 0-20mA,the type is current.

Example: AT+RTUADCDECIMAL1=0

Command: AT+RTUADCFULLVORAy=x

Explanation: the top range of sensor outputs voltage or current value.

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0-4294967295.

Example: assume the analog signal type is voltage.

AT+RTUADCFULLVORA1=1000000 (1V)

Command: AT+RTUADCZEROVORAy=x

Explanation: the low range of sensor outputs voltage or current value.

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0-4294967295，it related to the sensor ouput type

Example: assume the analog signal input type is current.

AT+RTUADCZEROVORA1=1000000 (1mA)

◆ MODBUS function

"MODBUS function" control analog input MODBUS function. If disable this function, this analog input channel returns a fixed 0 when MODBUS query.

Command: AT+RTUADCMBENy=x

Explanation: MODBUS fuctions of analog input.

Parameter: y range 1~8, corresponding to analogl input channel. x range 0~1，0 means disable，1 means enable.

Example: AT+RTUADCMBEN1=1

◆ Acqisition function

This item control analog input alarm and active report function.

Command: AT+RTUADCGETENy=x

Explanation: control analog input acquisition function.

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0-1，0 mean disable，1 mean enable.

Example: AT+RTUADCGETEN1=1

◆ Acqisition interval

This parameter control the analog input acquisition cycle, The unit is 10ms (milliseconds) . example:

this parameter is 6000 means: 6000*10ms=60 seconds

Command: AT+RTUADCTIMEy=x

Explanation: set analog input acquisition interval.

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0-4294967295，0 means 10ms.

Example: AT+RTUADCTIME1=1

◆ Alarm function

"Alarm funcion" enable or disable analog input alarm function.

Command: AT+RTUADCLRMENy=x

Explanation: control analog signal alarm function.

Parameter: y range 1~8, corresponding to analog input channel 1~8. x range 0-1，0 means disable, 1 means enable.

Example: AT+RTUADCLRMEN1=0

◆ Alarm trigger condition

It will alarm if analog input match this condition.

Command: AT+RTUADCLRMOPy=x

Explanation: alarm tigger conditon.

Parameter: y range 1~8, corresponding to analog input channel 1~8.

x range 0-11

0: less than low alarm limit will alarm.

1: less than or equal to low alarm limit will alarm.

2: mean greater than top alarm limit will alarm

3: greater than or equal to top alarm limit will alarm

4: greater than low alarm limit and less than top alarm limit will alarm

5: greater than or equal to low alarm limit and less than top alarm limit will alarm

6: greater than alarm limit and less than or equal to top alarm limit will alarm

7: greater than or equal to low alarm limit and less than or equal to top alarm limit will alarm

8: less than low alarm limit or greater than top alarm limit will alarm

9: less than or equal to low alarm limit or greater than top alarm limit will alarm

10: less than low alarm limint or greater than or equal to top alarm limit will alarm

11: less than or equal to low alarm limit or greater than or equal to top alarm limit will alarm.

Example: AT+RTUADCLRMOP1=0

◆ Alarm content

When analog input alarming, RTU will send SMS. The SMS content configured by this item.

Command: AT+RTUADCLRMTXTy=xxx

Explanation: set analog input alarm content.

Parameter: y range 1~8, corresponding to analog input channel 1~8. xxx means alarm content(<=140 bytes).

Example: AT+RTUADCLRMTXT1= adc ain1 alarm

◆ Alarm phone number

when analog input alarming, RTU will send SMS to these numbers.

Command: AT+RTUADCADDLRMNOy=xxx

Explanation: add analog input alarm phone numbers .

Parameter: y range 1~8, corresponding to analog input channel 1~8. xxx mean alarm phone number(its number is not more than 7).

Example: AT+RTUADCADDLRMNO1=13912345678,13812345678

Command: AT+RTUADCSETLRMNOy=xxx

Explanation: set alarm phone number, it delets alarm phone number that has setted.

Parameter: y range 1-8, it is analog input channel. xxx mean alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: AT+RTUADCSETLRMNO=13912345678,13812345678

Command: AT+RTUADCDELLRMNOy=xxx

Explanation: delete analog input alarm phone numbers, it delets the matched phone numbers from the current number list.

Parameter: y range 1~8, corresponding to analog input channel 1~8. xxx mean alarm phone number to be deleted(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: AT+RTUADCDELLRMNO1=13912345678,13812345678

◆ Active report function

It controls analog input acquisition active report function when use the extended RTU protocol.

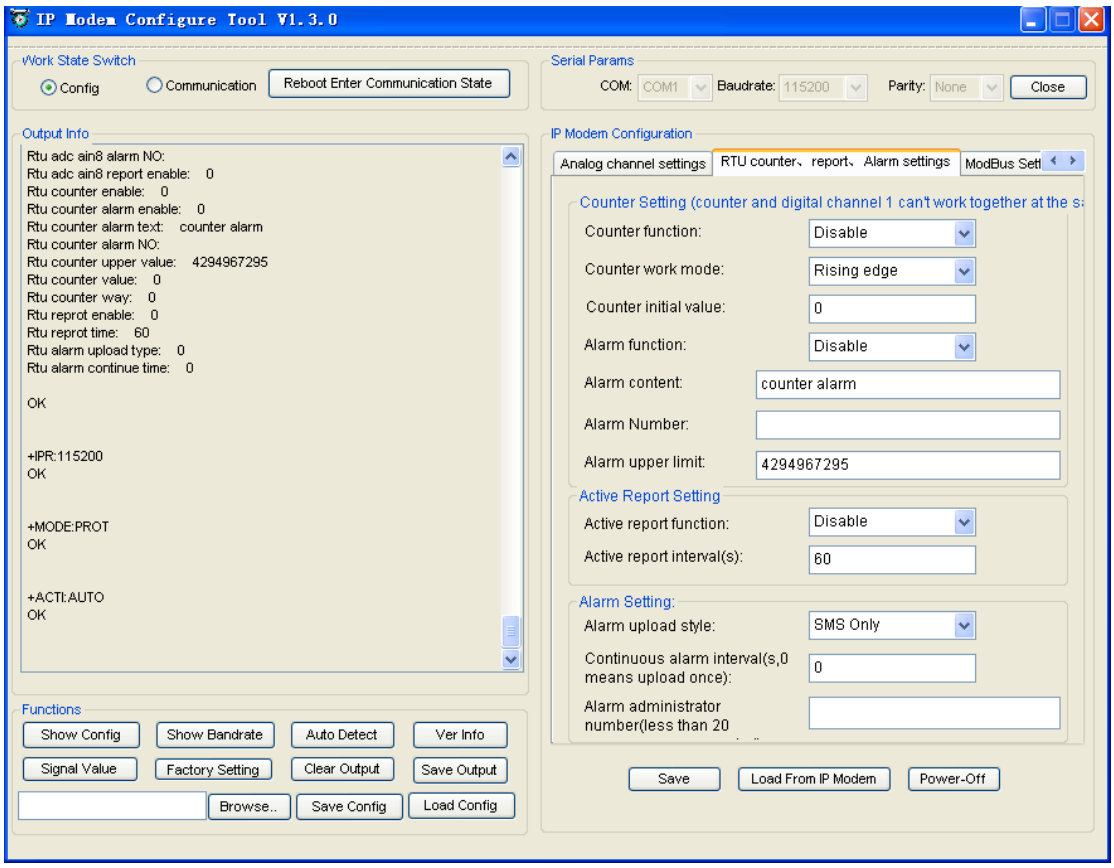
Command: AT+RTUADCREPORTENy=x

Explanation: enable or disable analog input acquisition active report function.

Parameter: y range 1~8, corresponding to analog input channel 1~8. x range 0-1，0 means disable, 1 means enable.

Example: AT+RTUADCREPORTEN1=0

.4.1.4.4 RTU counter、report、Alarm settings



All the RTU counter settings are configured in this page. Counter and digital input channel 1 are the same pin, Therefore two functions can not be enabled at the same time.

◆ Counter function

Enable or disable counter function.

Command: AT+RTUCOUNTEREN=x
Explanation: enable or disable counter function.
Parameter: x range 0-1，0 means disable，1 means enable.
Example: AT+RTUCOUNTEREN=1

◆ Counter work mode

The counter value will add 1 when the input waveform match the configured condition. if configured as both edge, the counter value will add 1 when the input waveform level changes.

Command: AT+RTUCOUNTERWAY=x
Explanation: set counter work mode.
Parameter: x range 0~2，0 means rising edge，1 means falling edge, 2 means both edge.
Example: AT+RTUCOUNTERWAY=1

◆ Counter initial value

It set counter initial value.

Command: AT+RTUCOUNTERVAL=x
Explanation: set counter initial value.
Parameter: x range0-4294967295.
Example: AT+RTUCOUNTERVAL=0

◆ Alarm function

“Alarm funcion” control counter alarm function.

Command: AT+RTUCOUNTERLRMREN=x
Explanation: enable or disable counter alarm function.
Parameter: x range 0-1，0 means disable, 1 means enable.
Example: AT+RTUCOUNTERLRMREN=0

◆ Alarm content

When counter alarming, RTU will send SMS. This item configure the SMS content.

Command: AT+RTUCOUNTERLRMTXT=xxx
Explanation: set counter alarm content.
Parameter: xxx mean counter alarm content(<=140 bytes).
Example: AT+RTUCOUNTERLRMTXT=counter alarm

◆ Alarm phone number

when RTU counter alarm, RTU will send sms to these numbers.

Command: AT+RTUCOUNTERADDLRMNO=xxx
Explanation: add alarm phone numbers.
Parameter: xxx means counter alarm phone numbers(can configure multiple phone

numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: AT+RTUCOUNTERADDLRMNO=13912345678,13812345678

Command: AT+RTUCOUNTERSETLRMNO=xxx

Explanation: set counter alarm phone numbers, it delete the old alarm phone number list and save with this new phone number list.

Parameter: xxx means counter alarm phone numbers(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: AT+RTUCOUNTERSETLRMNO=13912345678,13812345678

Command: AT+RTUCOUNTERDELLRMNO=xxx

Explanation: delete counter alarm phone number, it delete the matched phone number from the phone number list.

Parameter: xxx mean alarm phone numbers(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: AT+RTUCOUNTERDELLRMNO=13912345678,13812345678

◆ Alarm upper limit

Counter alarm when "Alarm function" enable and counter value is greater than this "Alarm upper limit" value.

Command: AT+RTUCOUNTERUPVAL=x

Explanation: set counter alarm upper limit.

Parameter: x range0-4294967295.

Example: AT+RTUCOUNTERUPVAL=0

◆ Active report function

"Active report function" is the global switch of active report function when use the extended RTU protocol. If disable this item, RTU will not actively report acquisition data to server.

Command: AT+RTUREPORTEN=x

Explanation: active report function.

Parameter: x range 0-1，0 means disable，1 means enable.

Example: AT+RTUREPORTEN=1

◆ Active report interval

In RTU extended protocol, if "Active report function" enable. The RTU will report acquisition data according to this time interval(unit: second). If RTU report acquisition data failed , then it will retransmit the data after 30 seconds, it will keep trying until server received successfully. If this parameter is zero, RTU will stop active report function.

Command: AT+RTUREPORTTIME=x
Explanation: active report interval.
Parameter: x range 0-1，0 means disable，1 means enable.
Example: AT+RTUREPORTTIME=1

◆ Alarm report method

When RTU alarm , alarm informations are transmitted to the user by this configured report method.

SMS Only: alarm informations are transmitted to the user by only SMS.

Protocol Only: alarm informations are transmitted to the user by only RTU extended protocol.

Protocol and SMS: alarm informations are transmitted to the user by both SMS and RTU extended protocol.

Command: AT+RTULRMUPLOADE=x
Explanation: alarm report method.
Parameter: x range 0-2，0 means SMS only，1 means protocol only, 2 means both SMS and protocol.
Example: AT+RTULRMUPLOADE=1

◆ Continuous alarm interval

When RTU continued alarm,The RTU will continuously report the alarm information according to this alarm interval until the alarm condition not match the configured alarm condition. If this parameter configured as zero, RTU report alarm information only once.

Command: AT+RTULRMTIME=x
Explanation: continuous alarm interval.
Parameter: x range 0-4294967295，0 mean report alarm information once, others mean continued alarm interval.
Example: AT+RTULRMTIME=1

◆ Alarm administrator number

When RTU alarm and report by sms way, all alarm informations are transmitted to these numbers.

Command: AT+RTUADDADMINNO=xxx

Explanation: alarm administrator number, .

Parameter: xxx mean alarm phone numbers(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: AT+RTUADDADMINNO=13912345678,13812345678

Command: AT+RTUSETADMINNO=xxx

Explanation: set alarm administrator number, it delete the old alarm phone number list and save with this new one.

Parameter: xxx means alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: AT+RTUSETADMINNO=13912345678,13812345678

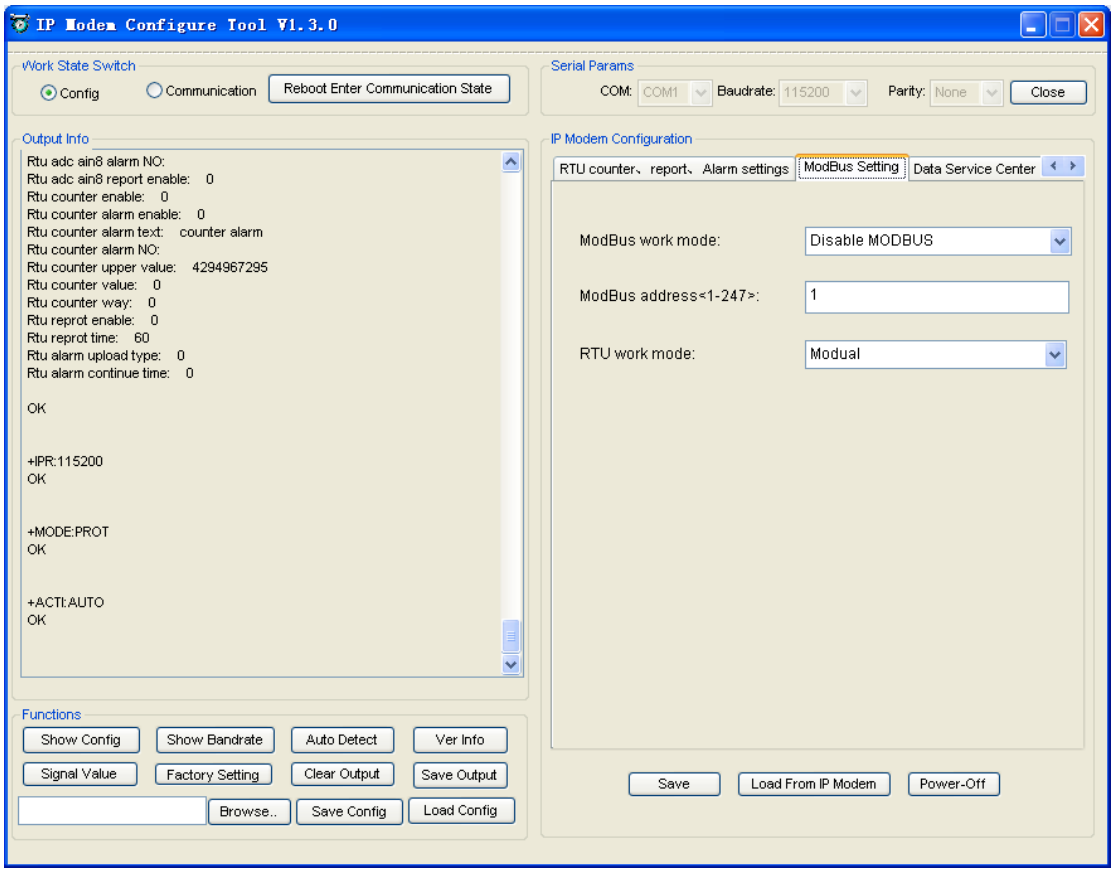
Command: AT+RTUDELADMINNO=xxx

Explanation: delete alarm administrator numbers, it delete the matched alarm phone number from the phone number list.

Parameter: xxx means alarm phone numbers(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: AT+RTUDELADMINNO=13912345678,13812345678

4.1.4.5 ModBus Setting



◆ ModBus work mode

"ModBus Work mode" used for configuring the RTU work mode. There are the following options:

Disable MOBUS: disable MODBUS function

Network RTU: RTU uses TCP to virtual serial port convert software to support MODBUS RTU protocol(the data transmitted over ip network).

Serial Port RTU: RTU uses RS232/RS485 to support MODBUS RTU protocol.

Command: AT+MBMODE=x

Explanation: set MODBUS functions work mode.

Parameter: x range 0-2，0 means Disable MOBUS，1 means Network RTU, 2 means Serial Port RTU.

Example: AT+MBMODE=1

◆ ModBus address

It sets MODBUS device address of this RTU, server identify devices based on this address.

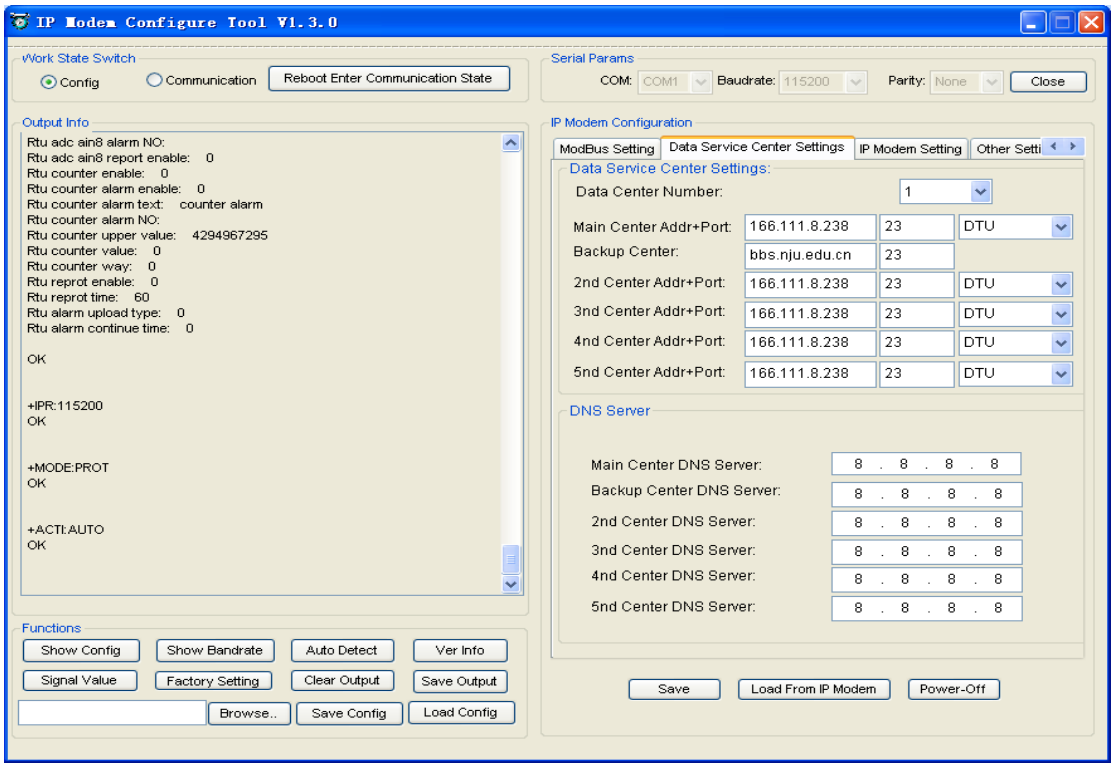
Command: AT+MBADDRESS=x
Explanation: set MODBUS device address.
Parameter: x range 1-247.
Example: AT+MBADDRESS=1

◆ RTU work mode

This item configure whether the RTU has wireless module,if there is no wireless module ,the network and SMS function will not work, in this circumstance , the RTU work as a standard serial RTU device.

Command: AT+RTUWRKMDE=x
Explanation: set RTU work mode.
Parameter: x range 0-1, 0 mean no wireless module, 1 mean has wireless module.
Example: AT+RTUWRKMDE=1

4.1.4.6 Data Service Center Settings



Settings on this page are the parameters related to Data Service Center (DSC).

◆Data Center Number

RTU support two Data Service Center (abbreviation: DSC)methods to transmit data.

Main and Backup: RTU always tries to connect with the Main DSC. If fails to connect with Main DSC, it will connect with Backup DSC at once

Note：If no Backup DSC exists, please configure the Backup DSC same as Main DSC.

Multi Data Service Center: RTU can connect with at most five DSC at the same time. All the multi DSC can receive the same application data .

If the Data Center Number is 0,there is no DSC working.
If the Data Center Number is 1, RTU work in Main and Backup DSC mode.
When “Data Center Number” is greater than 1, RTU works in Multi Data Service Center mode

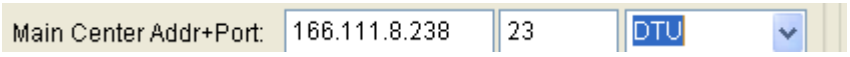
AT command:

AT+SVRCNT=x

x: Data Service Center number

Note: every AT command is terminated with a enter character.

◆Main Center Addr+Port:



IP Address and Port of the Main DSC, It's better to set the port greater than 1024.

Main and backup center function: it means the function of this center. RTU connect this center by TCP or Udp that is selected by 4.1.4.7 work mode.

IP MODEM: RTU and center have IP MODEM function.

GPS: RTU and center have GPS function(unfinished).

MODBUS: RTU uses TCP to virtual serial port convert software to support MODBUS RTU protocol.

extend RTU: RTU and center have the function of RTU extended protocol. You need to select this function, when you use the RTU server software which our company provided.

ZIGBEE: RTU and data center use ZIGBEE network to communication(unfinished).

Remote upgrade: This means the RTU is in upgrading process.It's a read only item.

AT command of the Main DSC IP address or domain name:

AT+IPAD=xxx

xxx: The IP address or domain name of the main server.

AT command of the Main DSC port:

AT+PORT=xxx

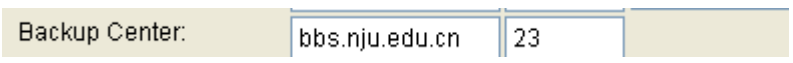
xxx: The main server port

AT command of this connection protocol type:

AT+SOCKETFUN1=x

x range 0-5, 0 means IP MODEM, 1 means GPS, 2 mean MODBUS, 3 means RTU extended protocol, 4 means ZIGBEE, 5 means Remote upgurading.

◆Backup Center Addr+Port:



IP address and port of the Backup DSC

AT command of the Backup DSC IP address or domain:

AT+IPSEC=xxx

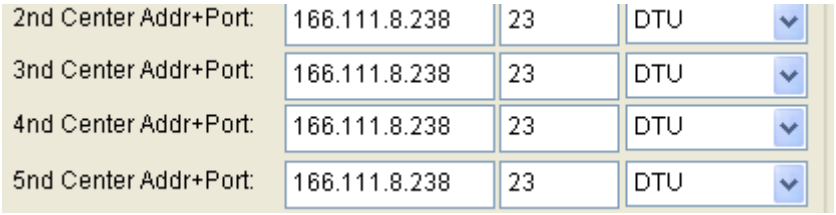
xxx: The IP address or domain name

AT command of the Backup DSC port:

AT+PTSEC=xxx

xxx: The port value

◆Multi DSC Configuration



When "Data Center Number" is greater than 1, this setting is valid. For example，setting the "Data Center Number" as 3, Main Center, 2nd Center, 3rd Center work as these three DSC

Multi center function: it means the function of this center. RTU connect this center by TCP or Udp that is selected by 4.1.4.7 work mode.

IP MODEM: RTU and center have IP MODEM function.

GPS: RTU and center have GPS function(unfinished).

MODBUS: RTU uses TCP to virtual serial port convert software to support MODBUS RTU protocol.

extend RTU: RTU and center have the function of RTU extended protocol. You need to select this function, when you use the RTU server software which our company provided.

ZIGBEE: RTU and data center use ZIGBEE network to communication(unfinished).

Remote upgrade: This means the RTU is in upgrading process.It's a read only item.

AT Command of the 2~5 DSC IP address or domain name

AT+IPADn=xxx

n is 1~4 correspond to center 2~5

xxx: The IP address or domain name

AT Command of the 2~5 DSC port

AT+PORTn=xxx

n is 1~4 correspond to port of center 2~5

xxx: The port value

AT command of the center protocol type:

AT+SOCKETFUNn=x

n range 2-5, corresponding to the center 2 to center 5.

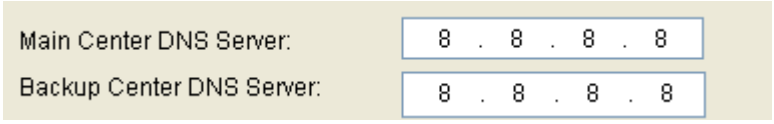
x range 0-5, 0 means IP MODEM, 1 means GPS, 2 means MODBUS, 3 means RTU extended protocol, 4 means ZIGBEE, 5 means Remote upgurading.

Example:

Set IP address of center 3 as 166.111.8.238, and port 5001, the AT command is as following:

AT+IPAD2=166.111.8.238
AT+PORT2=5001

◆Main and Backup Center DNS Server

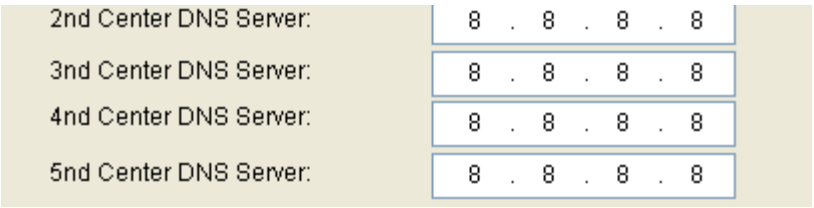


When the DSC Internet access uses domain name, It's necessary to set DNS server resolving the DSC domain name. When the Data Center Number is 1, Main and Backup Center DNS Server is used to resolve the Main center and Backup center correspondingly.

AT command of Main Center DNS server:
AT+DNSSVR=aaa.bbb.ccc.ddd
aaa.bbb.ccc.ddd: The DNS server IP address(must be IP address）.

AT command of Backup Center DNS server:
AT+DNSSV2=aaa.bbb.ccc.ddd
aaa.bbb.ccc.ddd: the DNS server IP address

◆Center 2~5 DNS Server



When the RTU work in Multi Data Service Center method and the centers use domain name, 2~5 DNS server is used to resolve center 2~5 correspondingly.

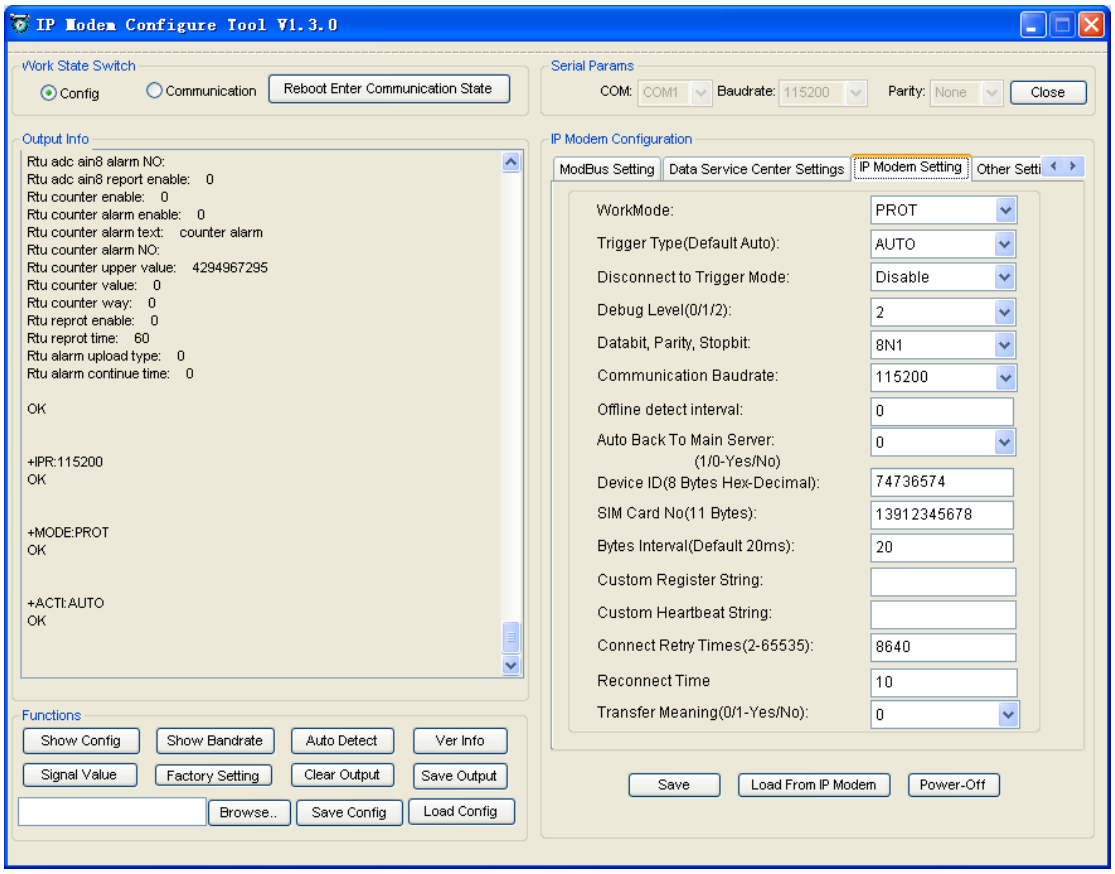
AT command of 2~5 DNS Server

AT+DNSSVRn=aaa.bbb.ccc.ddd

n is 1~4 correspond to center 2~5 DNS server.

aaa.bbb.ccc.ddd is the DNS server IP address

4.1.4.7 device Settings



◆ Work Mode

IP MODEM: According to different application requirements, there are several protocol workmode to choose.

PROT：Heartbeat packet with TCP protocol, Data transmission with TCP protocol, heartbeat packet and application data transmission are in the same TCP connection.

TRNS：RTU work as a common GPRS MODEM, It can be used in SMS, CSD, Dial-up applications.

TTRN：Heartbeat packet with UDP protocol, Data transmission with TCP protocol

TLNT：RTU work as a telnet client

LONG：Heartbeat packet with UDP protocol, Data transmission with TCP protocol, It can transmit at most 8192 bytes data one time through extra application protocol.

LNGT：Heartbeat with UDP protocol, Data transmission with TCP protocol, It can transmit at most 8192 bytes data one time through extra application protocol.

TUDP：Heartbeat with UDP protocol, Data transmission with UDP protocol, Heartbeat packet and application data are in the same UDP connection.

TCST：User can set custom register and heartbeat string, Data transmission with TCP protocol.

GPS, MDOBUS, extend RTU, ZIGBEE and remote upgrade:

TCP: RTU connect s by TCP, when it select PROT, TTRN, TLNT, LONG, LNGT and TCST mode.

UDP: RTU connects by udp, when it select TUDP, SUDP and PUDP mode.

AT command:

AT+MODE=xxxx

xxxx: one of the above workmode

◆ Trigger Type

Normally, RTU always keeps online and always be ready for data transmission. But in some circumstances, it's important to reduce wireless data flow. To realize this function, the software can makes RTU into sleep state in idle time. When there is application data to transmit, RTU can be triggered online ready for data transmission. There are total five methods to make RTU online:

AUTO: RTU always keeps online
SMSD: send a special short message to make RTU online
CTRL: make RTU online through a phone call to RTU
DATA: send special serial data to make RTU online
MIXD: the combination of SMSD, CTRL, DATA. RTU will be online when meet one of these three trigger methods.

AT Command:

AT+ACTI=xxxx

xxxx: one of the above trigger methods

◆ Disconnect to Trigger mode

When RTU enable trigger mode, and enable "Disconnect to Trigger mode" function. The RTU will re-enter trigger mode when it connect to the network fail or the network connection broken. This will make RTU enter into sleep state.

AT Command:
AT+ISTRIGMODE=x
x range 0-1, 0 means disable, 1 means enable

◆ Debug Level

Debug information is used to debug software when there is software problem.

0 --- no debug information output
1 --- simple prompt information output
2 --- detail debug information output

AT Command:
AT+DEBUG=x
x: the debug level value

Note: Only there is some problem to the RTU, It's necessary to set this value as 2, In normal applications, this value should set to 0 or 1, the default value is 1.

◆ Databit, Parity, Stopbit

8N1 --- 8 Databit, No parity, 1 Stopbit
8E1 --- 8 Databit, Even parity, 1 Stopbit
8O1 --- 8 Databit, Odd parity, 1 Stopbit

AT Command:
AT+SERMODE=xxx
xxx: one of the above serial mode

◆ Communication Baudrate

110	--- 110 bps
300	--- 300 bps
600	--- 600 bps
1200	--- 1200 bps
2400	--- 2400 bps
4800	--- 4800 bps
9600	--- 9600 bps
14400	--- 14400 bps
19200	--- 19200 bps
38400	--- 38400 bps
56000	--- 56000 bps
57600	--- 57600 bps
115200	--- 115200 bps

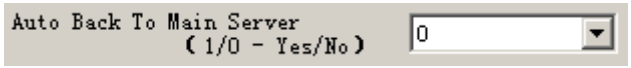
AT Command:
AT+IPR=xxx
xxx : one of the above baudrate

◆ Offline detect interval

When RTU has connected network. if the intervals that RTU does not transmit application data to server and receive application data from server(application data: in addition to heartbeat packet) exceed this parameter value, RTU will automatically disconnect server. if this parameter value is zero, it does not automaticall disconnect server.

AT Command:
AT+DTUNORECMINU=x
x range0-65535, unit is second.

◆ Auto Back To Main Server



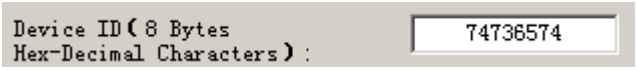
0 --- No

1 ---Yes

This item is only valid when you set “Data Center Number” as 1. In this mode, RTU will switch to backup center when main center have problems. If this item is set to 1 , RTU will check whether the main center work fine timely. When it detects the main server work fine, it will return back to the main server at once.

AT Command:
AT+RETMAIN=x
x : 0 or 1

◆ Device ID



The identity number of RTU, the value should be 8 bytes hex-decimal characters.

AT Command:
AT+IDNT=aabbccdd
aabbccdd: the identity number of RTU

◆ SIM Card No

The phone number of the SIM card .

AT Command:
AT+PHON=xxxxxxxxxx
xxxxxxxxxx: the SIM card phone number

◆ Bytes Interval

The time interval used to determine whether the serial data frame transmission has completed, RTU will send the serial data to the center when two bytes transmit time interval larger than this item value.

AT Command:

AT+BYTEINT=xxx

xxx: bytes interval time value（millisecond）

◆ Custom Register String

This item is only valid when the WorkMode is TCST. It's the self defined register string. It can be empty, the maximum length is 70 bytes.

AT Command:

AT+CONNRGST=xxx

xxx：self defined register string

◆ Custom Heartbeat String

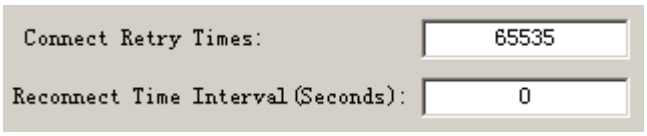
This item is only valid when the WorkMode is TCST. It's the self defined heartbeat string, It can be empty, the maximum length is 70 bytes.

AT Command:

AT+LINKRGST=xxx

xxx：self defined heartbeat string

◆ Reconnect setting



In normal applications, RTU will always try to connect with the center even if the center has problems or closed. To reduce these unnecessary wireless data flow, you can configure the "Connect Retry Times" and "Reconnect Time Interval" items. When RTU fail to connect to the center with the configured Retry Time, It will sleep "Reconnect Time Interval" time, then start next retry.

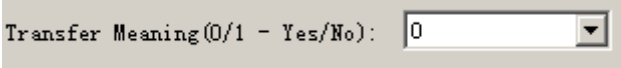
"Connect Retry Times" AT Command:

AT+RETRY=xxx

xxx：times try to connect to the center

"Reconnect Time Interval" AT Command:
AT+RDLWT=xxx
xxx: the sleep time until next retry.

◆ Transfer meanning

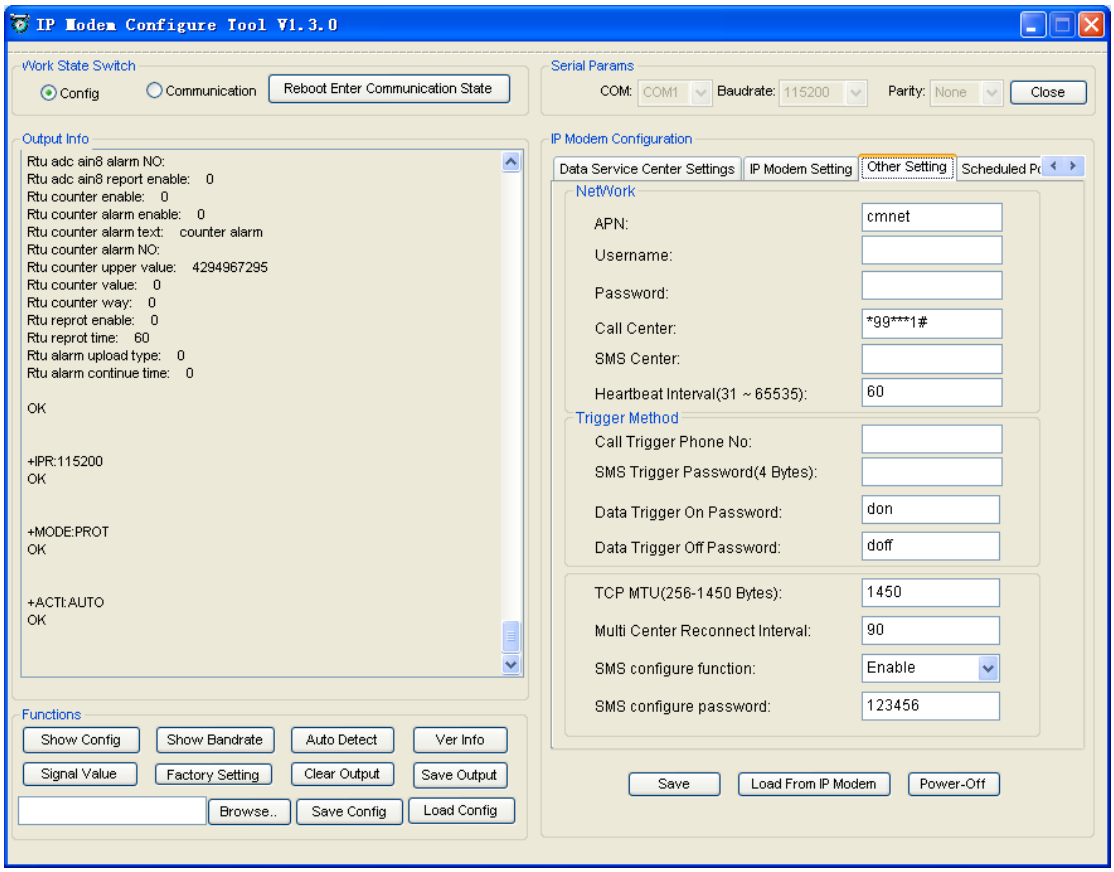


0 --- Yes, enable transfer meaning
1 --- No, disable transfer meaning

This item is only valid when the WorkMode is PROT. If this item is set to 0, RTU will transfer meaning to 0xfd and 0xfe. To know detail transfer meaning method, please refer <<RTU Transfer Meaning Explanation In the PROT work mode>>. If this item is set to 1, all the transmission is transparent.

AT Command:
AT+STRAIGHT=x
x：0 or 1

4.1.4.8 Other Settings



◆ Network

APN: access point name.

Username: username to login the ISP network.

Password: password to login the ISP network

Call Center: the call center phone number

Normally, the device Model and the parameters can configured as the following,if this can not work please inquiry your local mobile operators for the corresponding settings.

Model	APN	Username and	Call center

		password	
F2164	Cmnet	null	*99***1#
F2264	null	card	#777
F2364	cmnet	null	*99***1#
F2464	3gnet	null	*99#
F2564	cmnet	null	*98*1#
F2664	null	card	#777

AT Command of APN:
AT+APN=xxxx
xxxx: access point name

AT Command of Username:
AT+USERNAME=xxx
xxx： username

AT Command of Password:
AT+PASSWORD=xxx
xxx： password

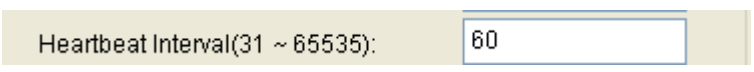
AT Command of Call Center:
AT+CENT=xxx
xxx: call center phone number of ISP

◆ SMS Center

Your local SMS center number

AT Command:
AT+SMSC=xxx
xxx: your local SMS center number

◆ Heartbeat Interval



Time interval sent heartbeat packet. (unit is second)

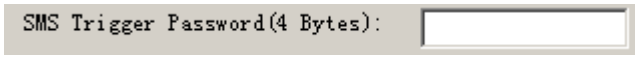
AT Command:
AT+POLLTIME=xxx
xxx: heartbeat packet time interval

◆ Call Trigger Phone No

This item is only valid when the "Trigger Type" is CTRL or MIXD. In this trigger type, RTU will keeps in idle state until it receives the trigger phone call, then it will connect to the center.

AT Command:
AT+CTRLNO=xxx
xxx : trigger phone number

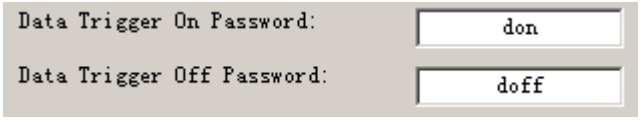
◆ SMS Trigger Password



This item is valid only when the "Trigger Type" is SMSD or MIXD, RTU will keeps in idle state until it receives the trigger short message, Then it will connect to the center.

AT Command:
AT+SMSDPSWD=xxx
xxx : SMS content to trigger RTU online

◆ Data Trigger Password



This item is valid only when the "Trigger Type" is DATA or MIXD, RTU will keeps in idle state until it receives the trigger on data, then it will connect to the center, It will return to the idle state when receives trigger off data.

AT Command of Data Trigger On Password:
AT+DONPSWD=xxx
xxx : data trigger on password

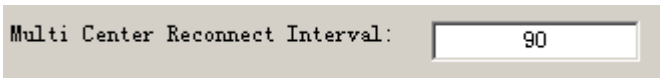
AT Command of data trigger off password:
AT+DOFFPSWD=xxx
xxx :data trigger off password

◆ TCP MTU

The maximum transmission unit of TCP packet

AT Command:
AT+TCPMTU=xxx
xxx : the MTU value

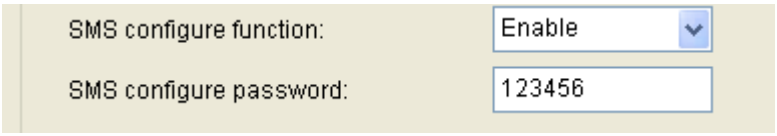
◆ Multi Center Reconnect Interval



This item is valid only when the "Data Center Number" is greater than 1.
When one of the configured data center lost connection, RTU will try to reconnect after the configured reconnect interval

AT Command:
AT+MCONTIME=xxx
xxx : reconnect time interval (unit is second)

◆ Set parameter of configure SMS



When "SMS configure function" is enabled, RTU parameters are set by SMS. The format of SMS refer to 4.2 Setting by SMS.

Command: AT+SMSCF=x
Explanation: whether SMS configure function is enabled.
Parameter: x range 0-1, 0 mean disable, 1 mean enable.
Example: AT+SMSCF=1

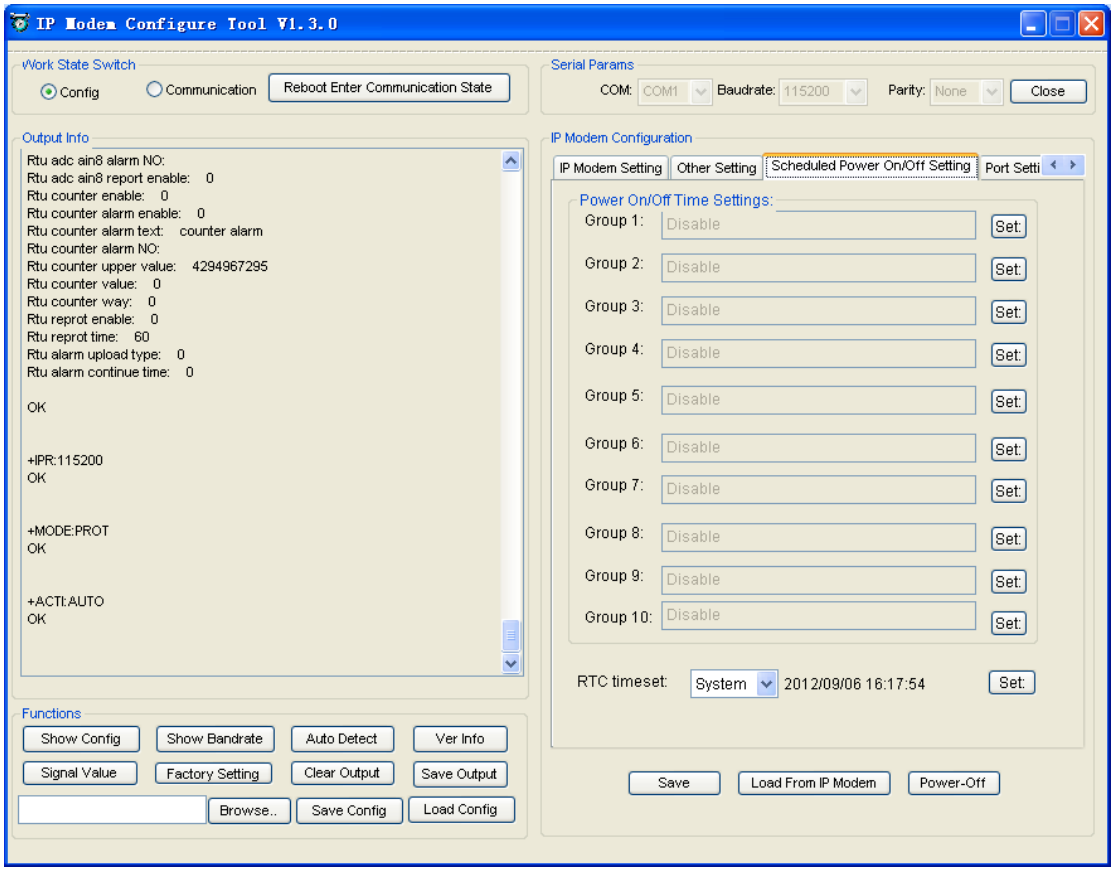
Command: AT+SMSCPW=xxx

Explanation: this password is used, when parameters are set by sms.

Parameter: xxx mean password, it is not more than 7 bytes.

Example: AT+SMSCPW=1234

4.1.4.9 Scheduled Power ON/OFF Setting



◆ RTC(Real Time Clock) Time Setting

Click "Set" to ensure the setting

AT Command:

AT+EXCCLK="yyyy/mm/dd,HH:MM:SS",W

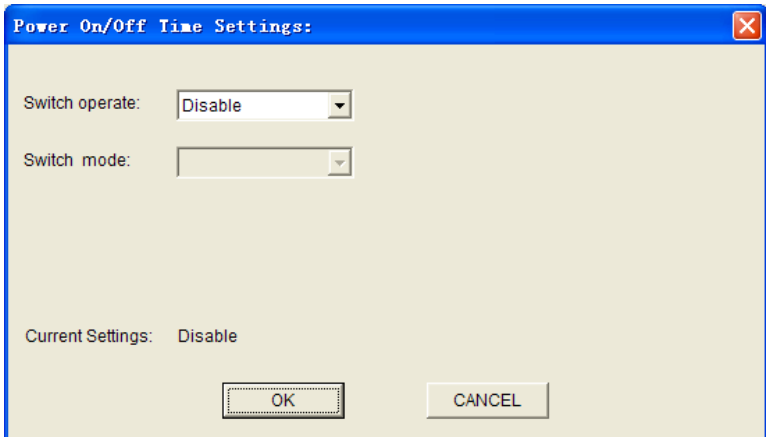
For example:

If the current time is at 12:30 on September 1st,2010, Wednesday, the corresponding at command:

AT+EXCCLK="2010/09/01,12:30:00",3

◆ Power On/Off Setting

Press “Set” you will see the follow window, you can do the setting.



AT Command:

AT+EXCALx=<options>[, <value1>[,<value2>[,<value3>]]]

Options:

D -- Disabled. Scheduled Power On/Off function is disabled (Default).

O – On. Set the RTU power on time.

S – Shut Down. Set the RTU power off time.

Setting type, [IP] use for power on, C use for power off

T -- Time. Set the action time point.

H -- per Hour. Set a time point of every hour

D -- per Day. Set a time point of every day

W -- per Week. Set a time point of every week

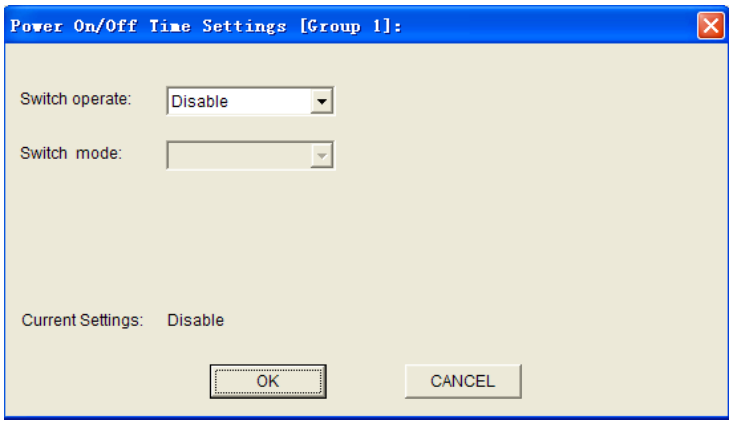
M -- per Month. Set a time point of every month

I -- Interval. Set the time interval.

P -- Power always on.

C -- Count down. Set the count down length.

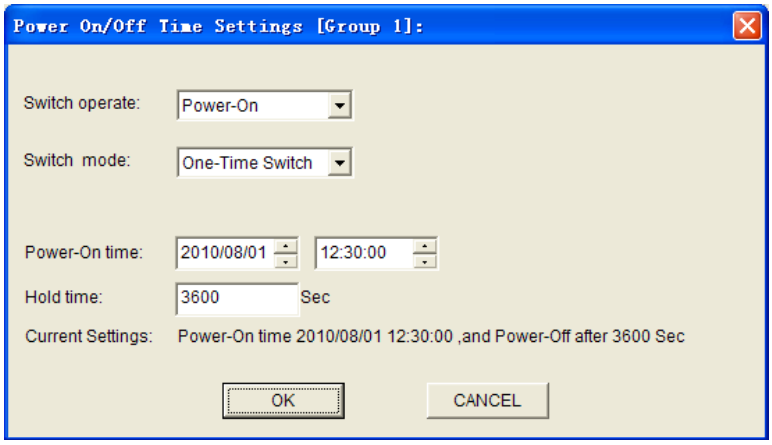
1. Disable



AT Command:
AT+EXCALx=D

Note: There is no blank in this AT command, the same as followings.

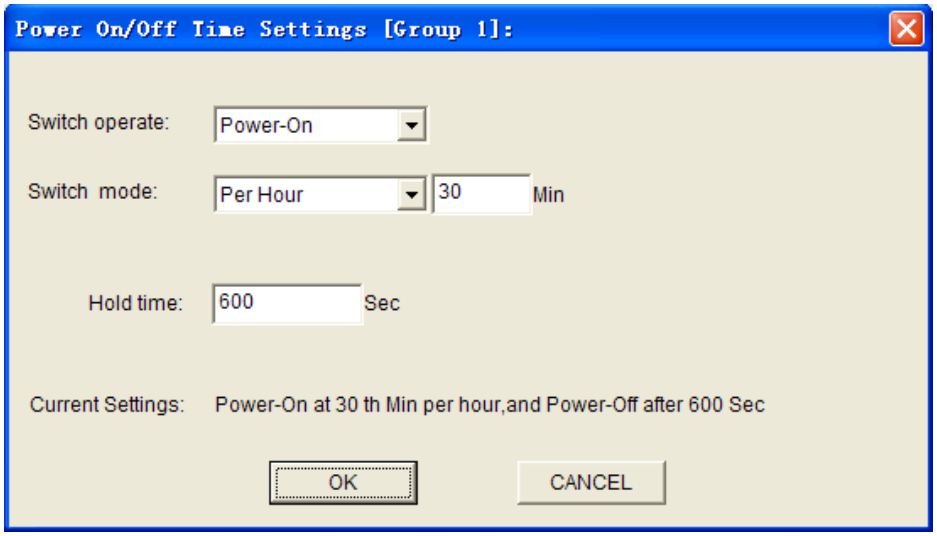
2. On-time switch power on



AT Command
AT+EXCALx=OT,<strLongTime>,<holdTime>
<strLongTime>: Format "2010/08/01,12:30:00"
<holdTime>: Hold time value.(Unit:Second)

For example:
RTU power on at 12:30:00, and power off at 13:30:00 on August 1st,2010
AT+EXCAL5=OT,"2010/08/01,12:30:00",3600

3. Power on per hour



AT Command:

AT+EXCALx=OH,<strTime>,<holdTime>

<strTime>: Format "00:30:00"

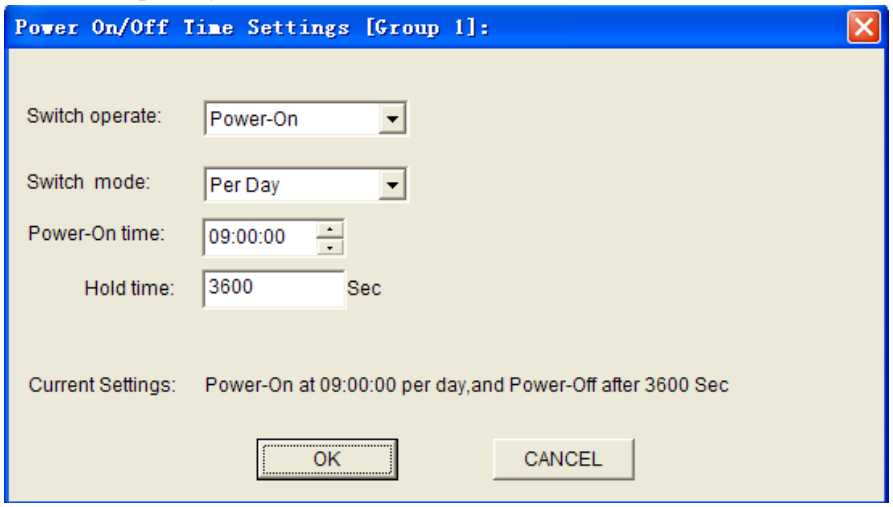
<holdTime>: Hold time value.(Unit:Second)

For example:

RTU power on at the 30th minute in every hour, and power off 10 minutes later.

AT+EXCAL1=OH,"00:30:00",600

4.Power on per day



AT Command:

AT+EXCALx=OD,<strTime>,<holdTime>

<strTime>: Format "12:30:00"

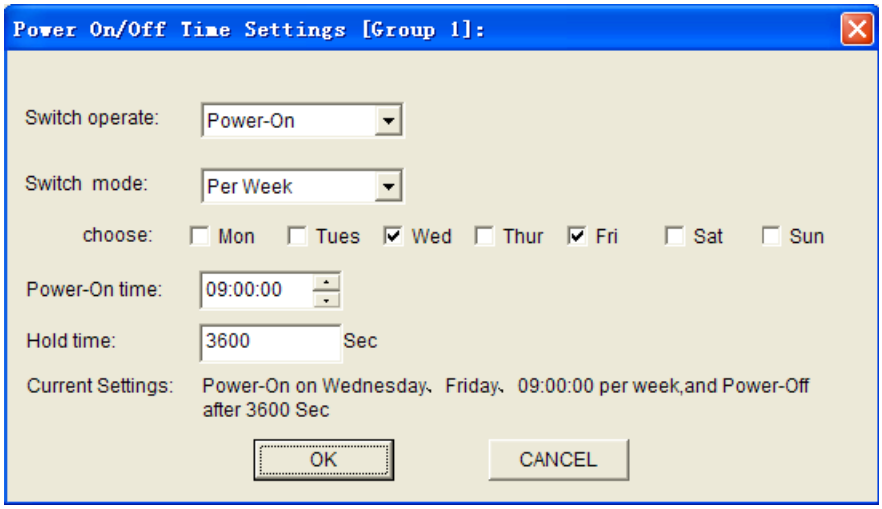
<holdTime>: Hold on value(Unit:Second)

For example:

RTU power-On at 09:00:00 everyday, and power-off 1 hour later.

AT+EXCAL3=OD,"09:00:00",3600

5.Power on per week



AT Command:

AT+EXCALx=OW,<week>,<strTime>,<holdTime>

<week>: 0123456 replace to Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and Sunday ordinal.

<strTime>: Format "12:30:00"

<holdTime>: Hold time value(Unit:Second)

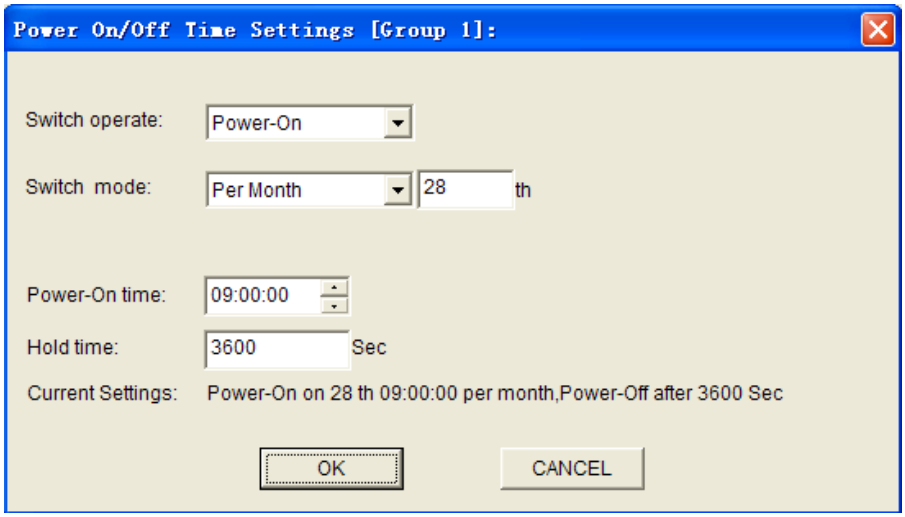
For example:

RTU power on at 09:00:00 on every Wednesday and Friday, and power off 1 hour later.

AT+EXCAL1=OW,35,"09:00:00",3600

The “35” replace to Wednesday and Friday.

6.Power on per month



AT Command:

AT+EXCALx=OM,<date>,<strTime>,<holdTime>

<date>: 0-31

<strTime>: Format "12:30:00"

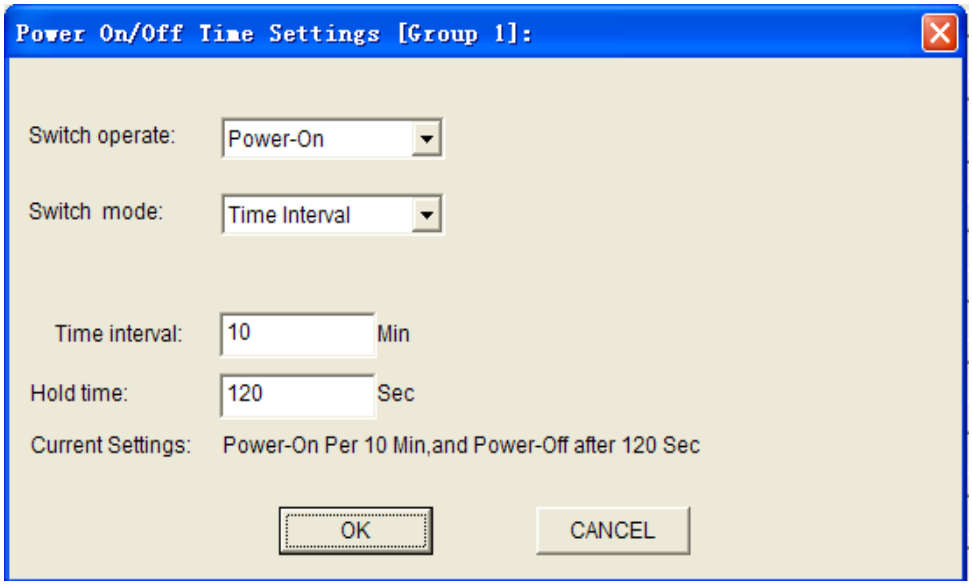
<holdTime>: Hold time value(Unit:Second)

For example:

RTU power on at 09:00:00 on the 28th every month,and power off 1 hour later.

AT+EXCAL3=OM,28,"09:00:00",3600

7.Power on with time interval



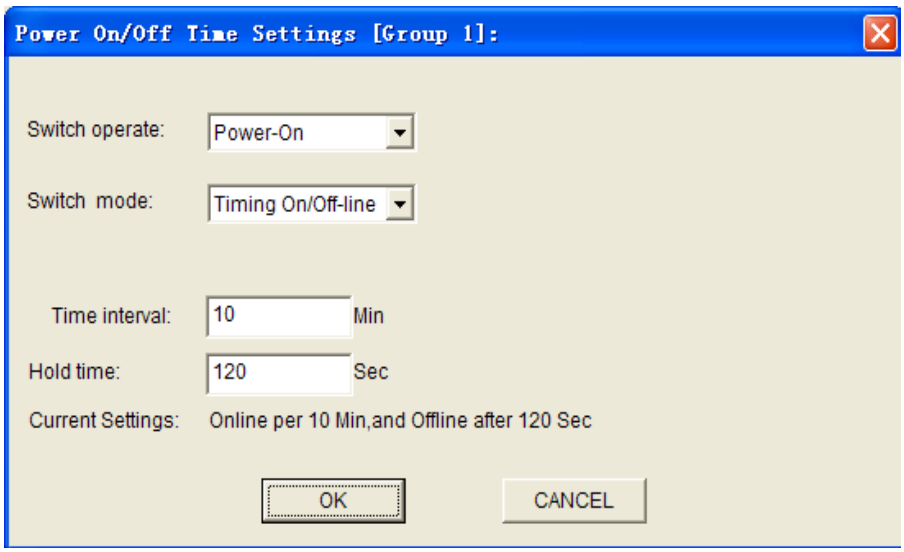
AT Command:

AT+EXCALx=OP,<intervalTime>,<holdTime>

<intervalTime>: interval time value(Unit:Minute)
<holdTime>: Hold time value(Unit:Second)

For example:
RTU power on interval every 10 minutes, and power off 120 seconds later.
AT+EXCAL1=OP,10,120

8.RTU online/offline with time interval

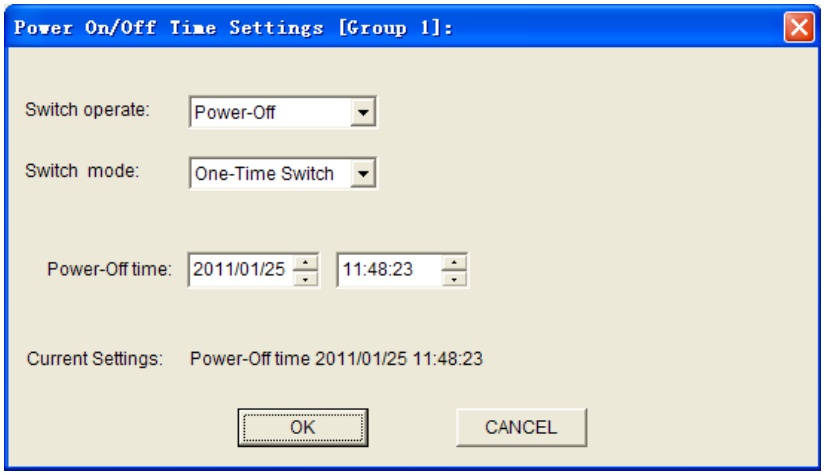


AT Command:
AT+EXCALx=OP,<intervalTime>,<holdTime>
<intervalTime>: interval time value(Unit:Minute)
<holdTime>: Hold time value(Unit:Second)

For example:
RTU online interval every 10 minute, and offline 120 seconds later.
AT+EXCAL1=OP,10,120

Note: RTU not power off in this mode, it is standby.

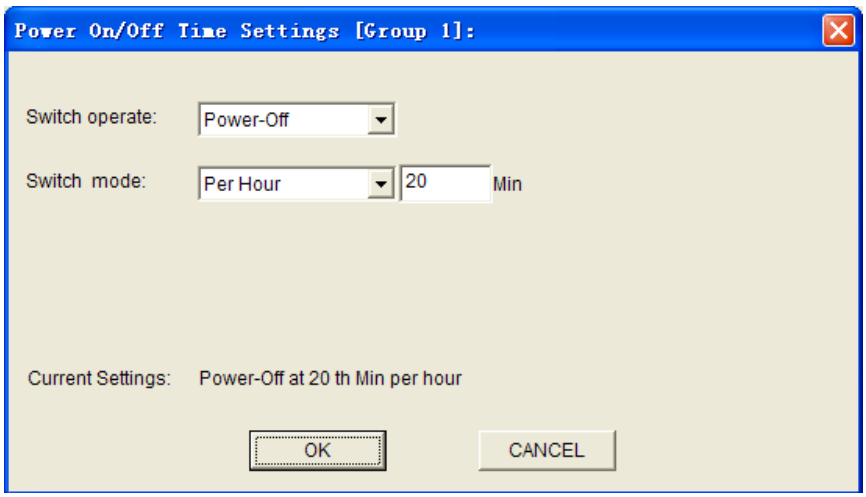
9.Power off at one time



AT Command:

AT+EXCALx=ST,<strTime>

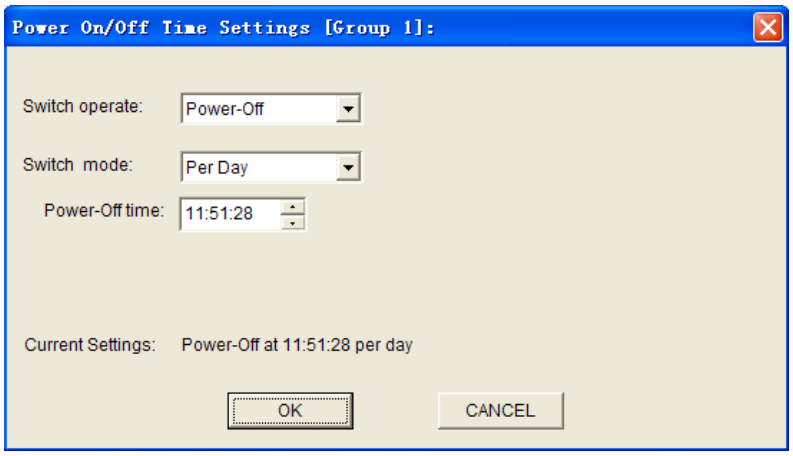
10.Power off per hour



AT Command:

AT+EXCALx=SH,<strTime>

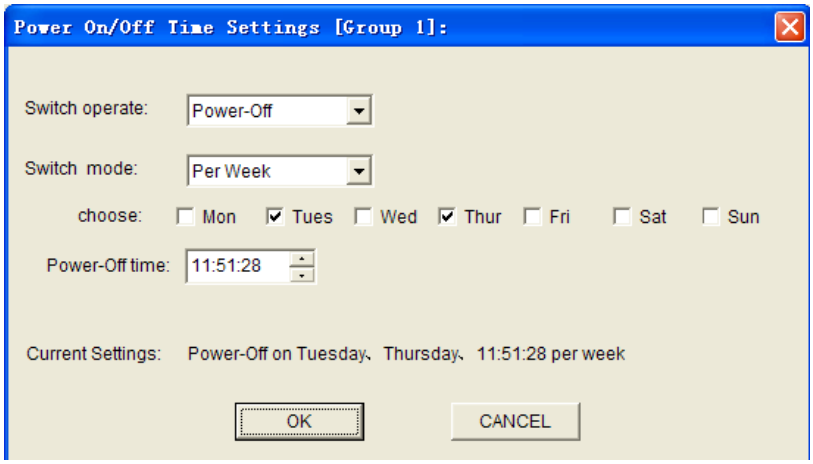
11.Power off per day



AT Command:

AT+EXCALx=SD,<strTime>

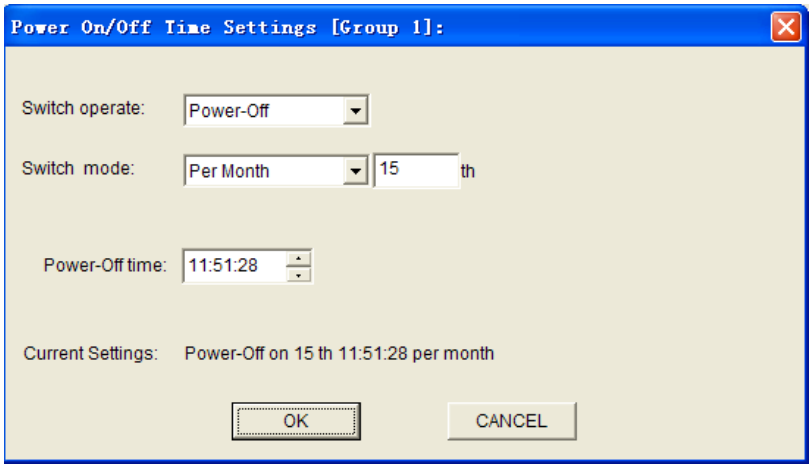
12.Power off at the same time in every week



AT Command:

AT+EXCALx=SW,<week>,<strTime>

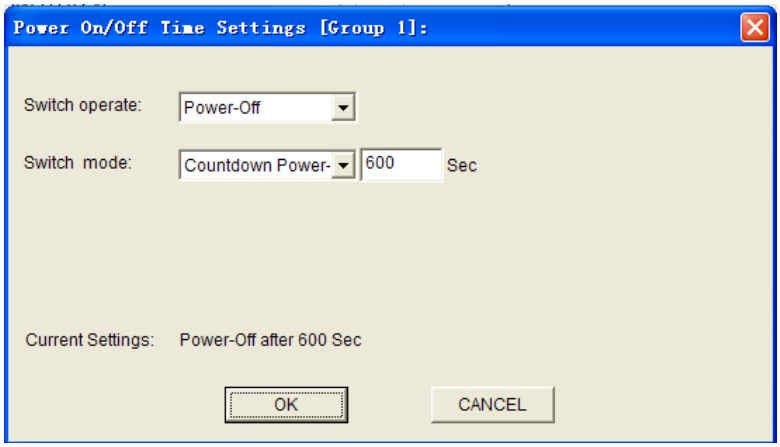
13.Power off per month



AT Command:

AT+EXCALx=SM,<date>,<strTime>

14.Power off with countdown



AT Command:

AT+EXCALx=SC,<afterTime>

<afterTime>: Countdown value(Unit:Second)

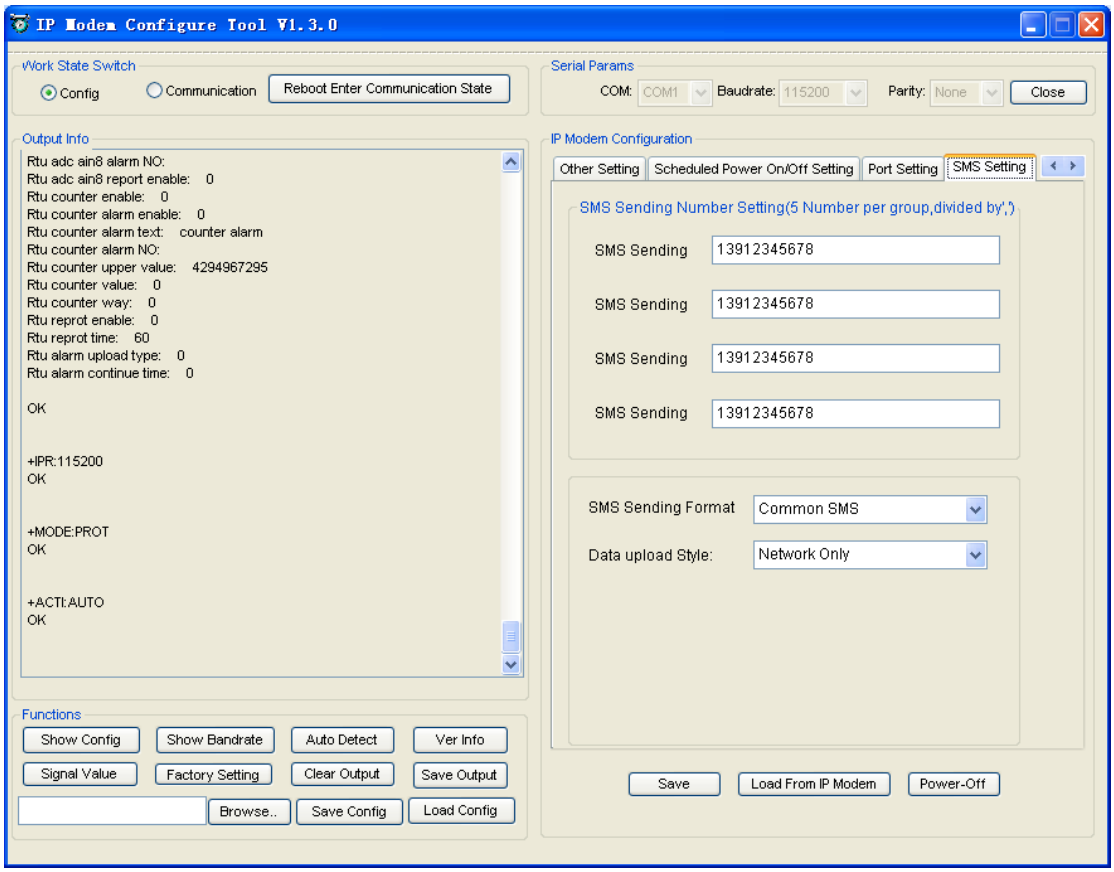
For example:

RTU power off 600 seconds later:

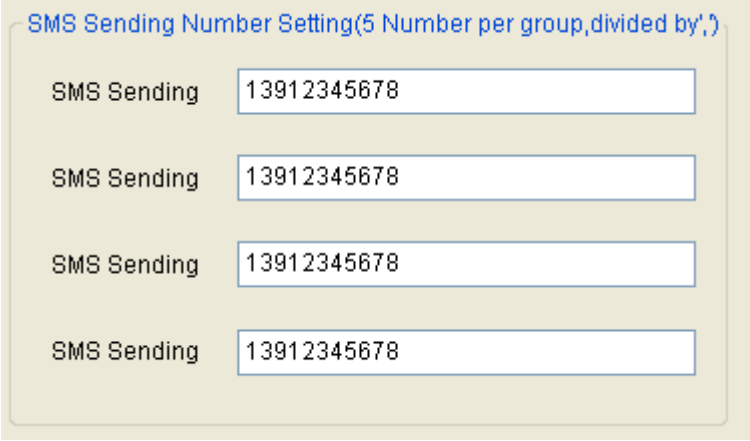
AT+EXCAL1=SC,60

Note: If the <aftertime> is 0,the RTU will power off immediately.

4.1.4.10 SMS Setting



◆ Destination number


SMS Sending Number Setting(5 Number per group,divided by',')
SMS Sending 13912345678
SMS Sending 13912345678
SMS Sending 13912345678
SMS Sending 13912345678

When RTU "Data upload Style" selects "SMS Only" or "Main Network SMS backup", The RTU will send report information by SMS. This parameter used for setting SMS destination number. Five phone numbers can be configured at each group, Each phone numbers are separated by

comma. The length of each phone number should less than 15 bytes.

AT Command:
AT+PHONEn=xxx
n range 1-4 correspond to group 1-4.
xxx means destination phone number.

◆ SMS Sending Format

Common SMS: It means visible characters. ASCCI code value is less than 127.
HEX SMS: It can send any hexadecimal number of 0x00-0xff.

AT Command:
AT+HEXSMS=x
x range 0-1 0 means common SMS, 1 means HEX SMS.

◆ Data upload Style

IP MODEM: when device receives data from RS232/RS485 , Its uploading method same as our ip modem product.
Extend RTU: acquisition data and alarm information are uploaded with extended RTU protocol.

There are three methods, as below:

Network Only: In this style, all application data are uploaded by network only. If RTU connect network fail, acquisition data will be saved to SPI FLASH. This acquisition data will uploaded when RTU successfully connected to network .

SMS Only: In this style, all application data are uploaded by sms only.

Main network SMS backup: In this style, all application data are uploaded with network as the first choice, if the network broken or connect fail, the application data will be uploaded by SMS.

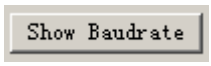
AT Command:
AT+OPENSMSBCKP=x
x range 0-2 0 means Network Only, 1 means SMS Only, 2 means Main network SMS backup

4.1.4.11 Functions

◆ Show Configure

Show current RTU settings

◆ Show Baudrate



Display the communication baudrate

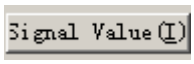
◆ Auto Detect

Simple way to determine whether RTU work fine

◆ Version Display

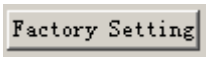
Show the software and hardware version

◆ Signal Value



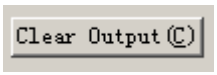
Display current wireless signal value

◆ Factory setting



Restore to factory settings

◆ Clear Output

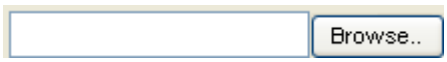


Clear the output information

◆ Save Output

Save the output info to a file

◆ Browse

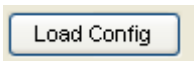


Browse the file directory

◆ Save Configure

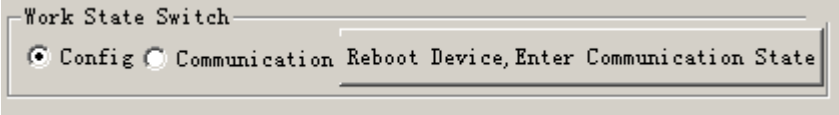
Save the current settings to a file, you can restore it from this file later

◆ Load Configure



Load parameters from a file.

4.1.5 Work State Switch



This tool can work in two states, “Configure” and “Communication”

Configure:

This state is used to configure parameters of RTU.

Communication:

This state is used as a common serial communication tool

Reboot Device, Enter Communication State:

This function button is used to reboot RTU and make the software switch to Communication state

4.2 Setting by SMS

4.2.1 Setting by AT command of SMS

When parameters configuration using this way, the length of SMS should not more than 140 bytes, It means that does not support long SMS.

Note: When parameters configuration using this way, the contents of setting must not include a semicolon.

The following format:

<password:command1;command2…>

password: This is a valid setting command, when this password is the same as the password at 4.1.4.8 Set parameter of configure SMS.

command: one sms can include multiple commands. At 4.1.4 configuration, AT command remove AT+ remaining command. This command is AT command of SMS. Multiple commands are separated by a semicolon.

…: This symbol indicates that one sms can include multiple commands.

For example: <123456;IPAD=120.42.46.98;PORT=5007>

Explanation: password is 123456, main center IP is 120.42.46.98, main center port is 5007.

SMS setting response as following:

setting successful: RTU will send one response SMS to user. SMS content: command(Corresponding settting command): Configure successful.

setting failed: RTU will send one response SMS to user, SMS content:

command(Corresponding settting command): Configure failed.

4.2.2 Setting by simple command of SMS

4.2.2.1 Format description

format description as follow:

password(command1:parameter1; command2:parameter2;command3:parameter3…)

password: This is a valid setting command, when this password is the same as the password at 4.1.4.8 Set parameter of configure SMS.

parentheses: its content is simple command of SMS.

command1: simple command

colon: Separate command and parameter

parameter1: the parameter of simple command. If parameter is empty, it is not written.

semicolon: Multiple commands are separated by a semicolon.

…; This symbol indicates that one sms can include multiple commands.

For example: 123456(S1IP1:120.42.46.98;S1NUM: 5007)

Explanation: password is 123456, main center IP is 120.42.46.98, main center port is 5007.

SMS setting response as follow:

setting successful: RTU will send one response SMS to user. SMS content: command(Corresponding settting command): Configure successful.

setting failed: RTU will send one response SMS to user, SMS content: command(Corresponding settting command): Configure failed.

4.2.2.2 Overall setting by SMS

◆ Query overall command

RTU has query overall command. This command does not have parameter, it means that all overall command are list by sms.

Command: ?:

Explanation: query overall command.

Parameter: none.

Example 1: 123456(?:)

Example 2: 123456(?:GCMD) query definition of GCMD cmd.

Add： J1-J3,3rd Floor,No.44,GuanRiRoad,SoftWare Park,XiaMen .361008.China
http：//www.fourfaith.com Tel： +86 592-6300326 6300325 6300324 Fax：+86 592-5912735

◆ Query setting command

RTU has query setting command. This command does not have parameter, it means that all setting command are list by sms. RTU has 9 categories of setting parameters.

Command: GCMD:xxx
Explanation: query setting command.
Parameter: none.
Example: 123456(GCMD:S1:) query the commands of category S1.
Example: 123456(GCMD:S1NUM) query the S1NUM command.

◆ setting remote upgrade

When RTU needs remote upgrade firmware, You need to konow software version and server address.

Command: CXRJBB:
Explanation: query the current version of the software
Parameter: none.
Example: 123456(CXRJBB:)

Command: SJCX:aa,b,cc,ip,port,ver
Explanation: upgrade firmware command.
Parameter: aa: firmware style, 00 means application firmware, 01 means BOOT firmware.
b: connect style , 0 means TCP, 1 means UDP.
cc: number of transmitting windows, rang 01-16. recommended value 16 for TCP, value 4 for UDP.
ip: upgrade server IP address, this server has upgrade firmware ,the RTU will retrive firmware from this server.
port: upgrade server listening port number.
ver: the software version of the upgrade firmware
Example: 123456 (SJCX:00,0,16,120.42.46.98,9991, F2X64-STANDARD-V1-0-1)

Command: TZSJ:
Explanation: stop upgrade firmware.
Parameter: none.
Example: 123456(TZSJ:)

4.2.2.3 Data Service Center Settings(S1 series)

Please refer to 4.1.4.6 Data Service Center Settings.

◆ Data Center Number

Please refer to 4.1.4.6 Data Center Number.

Command: S1NUM:x
Explanation: set data center number.
Parameter: x range 0-5, it mean that the total number of data center.
Example: 123456(S1NUM:1)

Command: G1NUM:
Explanation: get data center number.
Parameter: none.
Example: 123456(G1NUM:)

◆ Main Center Addr+Port:

Please refer to 4.1.4.6 Main center Addr+Port.

Command: S1IP1:xxx
Explanation: set main center ip address or domain name
Parameter: xxx mean ip address or domain name.
Example: 123456(S1IP1:120.42.46.98)

Command: G1IP1:
Explanation: get main center ip address or domain name.
Parameter: none.
Example: 123456(G1IP1:)

Command: S1PR1:xxx
Explanation: set main center the port value.
Parameter: xxx means the port value.
Example: 123456(S1PR1:9991)

Command: G1PR1:
Explanation: get the main center port value.
Parameter: none.

Example: 123456(G1PR1:)

Command: S1FN1:x
Explanation: set the function of main center.
Parameter: x range 0-5, 0 mean IP MODEM, 1 mean GPS, 2 mean MODBUS, 3 mean RTU extended protocol, 4 mean ZIGBEE, 5 mean Remote upgurade .
Example: 123456(S1FN1:9991)

Command: G1FN1:
Explanation: get the function of main center.
Parameter: none.
Example: 123456(G1FN1:)

◆ Backup Center Addr+Port:

Please refer to 4.1.4.6 Backup Center Addr+Port.

Command: S1IPB:xxx
Explanation: set backup center ip address or domain name.
Parameter: xxx means backup center ip address or domain name.
Example: 123456(S1IPB:120.42.46.98)

Command: G1IPB:
Explanation: get backup center ip address or domain name.
Parameter: none.
Example: 123456(G1IPB:)

Command: S1PRB:xxx
Explanation: set the backup center port value.
Parameter: xxx means the backup center port value.
Example: 123456(S1PRB:9991)

Command: G1PRB:
Explanation: get the backup center port value.
Parameter: none.
Example: 123456(G1PRB:)

◆ Multi DSC Configuration

Please refer to 4.1.4.6 Multi DSC Configuration.

Command: S1IPy:xxx
Explanation: set ip address or domain name
Parameter: y range 2~5 corresponding to center 2~5,
xxx means domain name or ip address.
Example: 123456(S1IP2:120.42.46.98)

Command: G1IPy:
Explanation: get ip address or domain name.
Parameter: y range 2~5 corresponding to center 2~5.
Example: 123456(G1IP2:)

Command: S1PRy:xxx
Explanation: set the port value.
Parameter: y range 2~5 corresponding to center 2~5.
xxx means the port value.
Example: 123456(S1PR2:9991)

Command: G1PRy:
Explanation: get the port value.
Parameter: y range 2~5 corresponding to center 2~5.
Example: 123456(G1PR2:)

Command: S1FNy:x
Explanation: set the function.
Parameter: y range 2-5 correspond to center 2~5.
x range 0-5, 0 mean IP MODEM, 1 mean GPS, 2 mean MODBUS, 3 mean RTU extended protocol, 4 mean ZIGBEE, 5 mean Remote upgurade .
Example: 123456(S1FN2:9991)

Command: G1FNy:
Explanation: get the function.
Parameter: y range 2-5 correspond to center 2~5.
Example: 123456(G1FN2:)

◆ Main and Backup Center DNS Server

Please refer to 4.1.4.6 Main and Backup Center DNS Server.

Command: S1DNS1:xxx
Explanation: set the main DNS server IP address(must be IP address）.

Parameter: xxx mean the DNS server IP address(must be IP address).
Example: 123456(S1DNS1:8.8.8.8)

Command: G1DNS1:
Explanation: get the main DNS server IP address.
Parameter: none.
Example: 123456(G1DNS1:)

Command: S1DNSB:xxx
Explanation: set the backup DNS server IP address.
Parameter: xxx means the DNS server IP address.
Example: 123456(S1DNSB:8.8.8.8)

Command: G1DNSB:
Explanation: get the backup DNS server IP address.
Parameter: none.
Example: 123456(G1DNSB:)

◆ Center 2~5 DNS Server

Please refer to 4.1.4.6 Center 2~5 DNS Server.

Command: S1DNSy:xxx
Explanation: set the DNS server IP address(must be IP address).
Parameter: y range 2~5 correspond to center 2~5.
xxx means the DNS server IP address(must be IP address).
Example: 123456(S1DNS2:8.8.8.8)

Command: G1DNSy:
Explanation: get the DNS server IP address.
Parameter: y range 2~5 correspond to center 2~5.
Example: 123456(G1DNS2:)

4.2.2.4 device Settings(S2 series)

◆ WorkMode

Please refer to 4.1.4.7 WorkMode.

Command: S2MD:xxx

Explanation: set one of the workmode.
Parameter: xxx mean set one of the workmode.
Example: 123456(S2MD:PROT)

Command: G2MD:
Explanation: get the current work mode.
Parameter: none.
Example: 123456(G2MD:)

◆ Trigger Type

Please refer to 4.1.4.7 Trigger Type.

Command: S2ACT:xxx
Explanation: set one of the trigger methods.
Parameter: xxx mean one of the trigger methods..
Example: 123456(S2ACT:AUTO)

Command: G2ACT:
Explanation: get the current trigger method..
Parameter: none.
Example: 123456(G2ACT:)

◆ Disconnect to Trigger mode

Please refer to 4.1.4.7 Disconnect to Trigger mode.

Command: S2RACT:x
Explanation: set re-enter trigger mode.
Parameter: x range 0~1, 0 means not re-enter trigger mode, 1 means re-enter trigger mode.
Example: 123456(S2RACT:1)

Command: G2RACT:
Explanation: get re-enter trigger mode.
Parameter: none.
Example: 123456(G2RACT:)

◆ Offline detect interval

Please refer to 4.1.4.7 Offline detect interval.

Command: S2IT:x
Explanation: set automatically disconnect server time.
Parameter: range0~65535, unit is second.
Example: 123456(S2IT:0)

Command: G2IT:
Explanation: get automatically disconnect server time.
Parameter: none.
Example: 123456(G2IT:)

◆ Debug Level

Please refer to 4.1.4.7 Debug Level.

Command: S2DB:x
Explanation: set the debug level value.
Parameter: range0~2, 0 means no debug information output, 1 means simple prompt information output, 2 mean detail debug information output.
Example: 123456(S2DB:0)

Command: G2DB:
Explanation: get the debug level value.
Parameter: none.
Example: 123456(G2DB:)

◆ Device ID

Please refer to 4.1.4.7 Device ID.

Command: S2ID:x
Explanation: set the identity number of RTU.
Parameter: the value should be 8 bytes hex-decimal characters
Example: 123456(S2ID:00000001)

Command: G2ID:
Explanation: get the identity number of RTU.
Parameter: none.
Example: 123456(G2ID:)

◆ SIM Card No

Please refer to 4.1.4.7 SIM Card No.

Command: S2LNO:x
Explanation: set the SIM card phone number.
Parameter: the SIM card phone number(not more than 11 bytes)
Example: 123456(S2LNO:13812345678)

Command: G2LNO:
Explanation: get the SIM card phone number.
Parameter: none.
Example: 123456(G2LNO:)

4.2.2.5 Other Settings(S3 series)

◆ Network

Please refer to 4.1.4.8 Network.

Command: S3APN:xxx
Explanation: set access point name.
Parameter: xxx mean access point name.
Example: 123456(S3APN:cmnet)

Command: G3APN:
Explanation: get access point name.
Parameter: none.
Example: 123456(G3APN:)

Command: S3APNN:xxx
Explanation: set username.
Parameter: xxx means user name.
Example: 123456(S3APNN:)

Command: G3APNN:
Explanation: get user name.
Parameter: none.
Example: 123456(G3APNN:)

Command: S3APNP:xxx
Explanation: set password.
Parameter: xxx means password.
Example: 123456(S3APNP:)

Command: G3APNP:
Explanation: get password.
Parameter: none.
Example: 123456(G3APNP:)

Command: S3APND:xxx
Explanation: set call center phone number of ISP.
Parameter: xxx mean call center phone number of ISP.
Example: 123456(S3APND:*99***1#)

Command: G3APND:
Explanation: get call center phone number of ISP.
Parameter: none.
Example: 123456(G3APND:)

◆ Heartbeat Interval

Please refer to 4.1.4.8 heartbeat Interval.

Command: S3HT:x
Explanation: set heartbeat packet time interval.
Parameter: x range 1~65535, unit is second.
Example: 123456(S3HT:31)

Command: G3HT:
Explanation: get heartbeat packet time interval.
Parameter: none.
Example: 123456(G3HT:)

4.2.5.6 SMS Setting(S4 series)

◆ Set parameter of configure SMS

Please refer to 4.1.4.8 Set parameter of configure SMS.

Command: S4SMSP:xxx
Explanation: set SMS password.
Parameter: xxx mean password, it is not more than 7 bytes.
Example: 123456(S4SMSP:1234)

Command: G4SMSP:
Explanation: get SMS password.
Parameter: none.
Example: 123456(G4SMSP:)

◆ Destination number

Please refer to 4.1.4.10 Destination number.

Command: S4SNOy:xxx
Explanation: set the destination number of SMS.
Parameter: y range 1~4 correspond to group 1~4.
xxx means destination phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).
Example: 123456(S4SNO1:13812345678,13912345678)

Command: G4SNOy:
Explanation: get the destination number of SMS.
Parameter: none.
Example: 123456(G4SNO1:)

◆ SMS Sending Format

Please refer to 4.1.4.10 SMS Sending Format.

Command: S4SHEX:x
Explanation: set sending format of SMS.
Parameter: x range 0~1 0 mean common SMS, 1 mean HEX SMS.
Example: 123456(S4SHEX:0)

Command: G4SHEX:
Explanation: get sending format of SMS.
Parameter: none.
Example: 123456(G4SHEX:)

◆ Data upload Style

Please refer to 4.1.4.10 Data upload Style.

Command: S4SUT:x
Explanation: set data upload style.
Parameter: x range 0~2, 0 means Network Only, 1 means SMS Only, 2 means Main network SMS backup.
Example: 123456(S4SUT:0)

Command: G4SUT:
Explanation: get data upload style..
Parameter: none.
Example: 123456(G4SUT:)

4.2.5.7 Functions(S5 series)

◆ Restart

If customers send this command to RTU through SMS, RTU will reboot.

Command: S5RB:x
Explanation: reboot RTU.
Parameter: none.
Example: 123456(S5RB:)

◆ Factory setting

If customers send this command to RTU through SMS, RTU will restore to factory settings.

Command: S5RS:x
Explanation: restore to factory settings.
Parameter: none.
Example: 123456(S5RS:)

◆ RTC(Real Time Clock) Time Setting

Please refer to 4.1.4.9 RTC(Real Time Clock)Time Setting.

Command: S5STM:xxx
Explanation: set RTC time.
Parameter: xxx is RTC time.
Example: 123456(S5STM:"2010/09/01,12:30:00",3)

Command: G5STM:
Explanation: get RTC time.
Parameter: none.
Example: 123456(G5STM:)

4.2.5.8 ModBus Setting(S5 series)

◆ ModBus work mode

Please refer to 4.1.4.5 ModBus work mode.

Command: S5MBW:x
Explanation: set MODBUS function work mode.
Parameter: x range 0~2，0 means Disable MOBUS，1 means Network RTU, 2 means Serial Port RTU.
Example: 123456(S5MBW:0)

Command: G5MBW:
Explanation: get MODBUS function work mode.
Parameter: none.
Example: 123456(G5MBW:)

◆ ModBus address

Please refer to 4.1.4.5 ModBus address.

Command: S5ADDR:x
Explanation: set MODBUS device address.
Parameter: x range 1~247.
Example: 123456(S5ADDR:1)

Command: G5ADDR:
Explanation: get MODBUS device address.
Parameter: none.

Example: 123456(G5ADDR:)

4.2.5.9 report and alarm settings(S5 series)

◆ Active report function

Please refer to 4.1.4.4 Active report function.

Command: S5REN:x
Explanation: enable or disable active report function.
Parameter: x range 0-1，0 mean disable，1 mean enable.
Example: 123456(S5REN:1)

Command: G5REN:
Explanation: get active report function.
Parameter: none.
Example: 123456(G5REN:)

◆ Active report interval

Please refer to 4.1.4.4 Active report interval.

Command: S5RTM:x
Explanation: set active report interval.
Parameter: x range 0~4294967295，0 means disable，1 means enable.
Example: 123456(S5RTM:1)

Command: G5RTM:
Explanation: get active report interval.
Parameter: none.
Example: 123456(G5RTM:)

◆ Alarm upload style

Please refer to 4.1.4.4 Alarm upload style.

Command: S5LMUT:x
Explanation: set alarm upload style.
Parameter: x range 0~2，0 means SMS only，1 means protocol only, 2 means both SMS and

protocol.

Example: 123456(S5LMUT:1)

Command: G5LMUT:

Explanation: get alarm upload style.

Parameter: none.

Example: 123456(G5LMUT:)

◆ Continuous alarm interval

Please refer to 4.1.4.4 Continuous alarm interval.

Command: S5LMTM:x

Explanation: set continuous alarm interval.

Parameter: x range 0-4294967295，0 mean report alarm information once, others mean continued alarm time interval.

Example: 123456(S5LMTM:1)

Command: G5LMTM:

Explanation: get continuous alarm interval.

Parameter: none.

Example: 123456(G5LMTM:)

◆ Alarm administrator number

Please refer to 4.1.4.4 Alarm adnubustrator number.

Command: S5AANO:xxx

Explanation: add alarm administrator number,.

Parameter: xxx mean alarm phone number(its number is not more than 7).

Example: 123456(S5AANO: 13912345678,13812345678)

Command: S5SANO:

Explanation: set alarm administrator number, it delets alarm phone number that has setted.

Parameter: xxx mean alarm phone number(its number is not more than 7).

Example: 123456 (S5SANO:13912345678,13812345678)

Command: S5DANO:xxx

Explanation: delete alarm administrator number, it delets alarm phone number that is the same as this parameter.

Parameter: xxx mean alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

.

Example: 123456(S5DANO:13912345678,13812345678)

Command: G5ANO:

Explanation: get alarm administrator number.

Parameter: none.

Example: 123456 (G5ANO:)

4.2.5.10 Digital channel settings(S6 series)

◆ Digital input function

Please refer to 4.1.4.1 Digital input function.

Command: S6ENy:x

Explanation: set global switch of digital input.

Parameter: y range 1~8, corresponding to digital input channel 1~8. x range 0~1，0 means disable，1 means enable.

Example: 123456(S6EN1:0)

Command: G6ENy:

Explanation: get global switch of digital input.

Parameter: y range 1~8, corresponding to digital input channel 1~8.

Example: 123456(G6EN1:)

◆ MODBUS function

Please refer to 4.1.4.1 MODBUS function.

Command: S6MBENy:x

Explanation: enable or disable MODBUS fuction of digital input.

Parameter: y range 1~8, corresponding to digital input channel. x range 0~1，0 means disable，1 means enable.

Example: 123456(S6MBEN1:0)

Command: G6MBENy:

Explanation: get MODBUS fuction status of digital input.

Parameter: y range 1~8, corresponding to digital input channel.

Example: 123456(G6MBEN1:)

◆ Acquisition function

Please refer to 4.1.4.1 Acquisition function.

Command: S6GENy:x

Explanation: enable or disable acquisition function.

Parameter: y range 1~8, corresponding to digital input channel 1~8. x range 0~1，0 means disable，1 means enable.

Example: 123456(S6GEN1:0)

Command: G6GENy:

Explanation: get the acquisition function status.

Parameter: y range 1~8, corresponding to digital input channel 1~8.

Example: 123456(G6GEN1:)

◆ Acqisition interval

Please refer to 4.1.4.1 Acquisition interval.

Command: S6GTMy:x

Explanation: set acquisition interval.

Parameter: y range1~8, corresponding to digital input channel 1~8. x range 0~4294967295，0 means 10ms.

Example: 123456(S6GTM1:0)

Command: G6GTMy:

Explanation: get acquisition interval.

Parameter: y range 1~8, corresponding to digital input channel 1~8.

Example: 123456(G6GTM1:)

◆ Alarm function

Please refer to 4.1.4.1 Alarm function.

Command: S6LENy:x

Explanation:enable or disable the alarm function.

Parameter: y range 1~8, corresponding to digital input channel 1~8. x range 0~1，0 means disable, 1 means enable.

Example: 123456(S6LEN1:0)

Command: G6LENy:
Explanation: get alarm function status.
Parameter: y range 1~8, corresponding to digital input channel 1~8.
Example: 123456(G6LEN1:)

◆ Alarm trigger condition

Please refer to 4.1.4.1 Alarm trigger condition.

Command: S6LOPy:x
Explanation: set alarm tigger conditon.
Parameter: y range 1~8, corresponding to digital input channel 1~8. x range 0-4，0 means low level, 1 means high level, 2 means rising edge, 3 means falling edge, 4 means both edge.
Example: 123456(S6LOP1:0)

Command: G6LOPy:
Explanation: get alarm tigger conditon.
Parameter: y range 1~8, corresponding to digital input channel 1~8.
Example: 123456(G6LOP1:)

◆ Alarm content

Please refer to 4.1.4.1 Alarm content.

Command: S6LTXy:xxx
Explanation: set alarm content.
Parameter: y range 1~8, corresponding to digital input channel 1~8. xxx means alarm content(<=140 bytes).
Example: 123456(S6LTX1:input io1 alarm)

Command: G6LTXy:
Explanation: get alarm content..
Parameter: y range 1~8, corresponding to digital input channel 1~8.
Example: 123456(G6LTX1:)

◆ Alarm phone number

Please refer to 4.1.4.1 Alarm phone number.

Command: S6LANOy:xxx

Explanation: add alarm phone number.

Parameter: y range 1~8, corresponding to digital input channel 1~8. xxx means alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: 123456(S6LANO1:13912345678,13812345678)

Command: S6LSNOy:xxx

Explanation: set alarm phone number, it replace the old phone numbers with the new setting.

Parameter: y range 1~8, corresponding to digital input channel 1~8. xxx means alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: 123456(S6LSNO1:13912345678,13812345678)

Command: S6LDNOy:xxx

Explanation: delete alarm phone number, it delets alarm phone number that is the same as this parameter.

Parameter: y range 1~8, corresponding to digital input channel 1~8. xxx mean alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: 123456(S6LDNO1:13912345678,13812345678)

Command: G6LNOy:

Explanation: get alarm phone number.

Parameter: y range 1~8, corresponding to digital input channel 1~8.

Example: 123456(G6LNO1:)

◆ Active report function

Please refer to 4.1.4.1 Active report function.

Command: S6RPENy:x

Explanation:enable or disable active report function

Parameter: y range 1~8, corresponding to digital input channel 1~8. x range 0~1，0 means disable, 1 means enable.

Example: 123456(S6RPEN1:0)

Command: G6RPENy:

Explanation: get the status of active report function.

Parameter: y range 1~8, corresponding to digital input channel 1~8.

Example: 123456(G6RPENy:)

4.2.5.11 Optocoupler and relay settings(S7 series)

◆ Digital output function

Please refer to 4.1.4.2 Digital output function.

Command: S7ENy:x

Explanation:enable or disable digital output function.

Parameter: y range 1~8, corresponding to digital input channel(1-4 means optocouplers channel 1-4, 5-8 means relay channel 1-4). x range 0~1，0 means disable，1 means enable.

Example: 123456(S7EN1:0)

Command: G6RPENy:

Explanation: query the digital output function.

Parameter: y range 1~8, corresponding to digital input channel(1-4 means optocouplers channel 1-4, 5-8 mean relay channel 1-4).

Example: 123456(G6RPENy:)

◆ MODBUS logic 1 output

Please refer to 4.1.4.2 MODBUS logic 1 output.

Command: S7MBOy:x

Explanation: set MODBUS logic 1 output.

Parameter: y range 1~8, corresponding to digital input channel(1-4 mean optocouplers channel 1~4, 5~8 mean relay channel 1~4).

optocouplers: x range 0~5，0 means low level，1 means high level. 2 means rising edge, 3 means falling edge, 4 means both edge. 5 means square wave.

relays: x range 0~1，0 mean disconnet，1 mean connect.

Example: 123456(S7MBO1:0)

Command: G7MBOy:

Explanation: get MODBUS logic 1 output.

Parameter: y range 1~8, corresponding to digital input channel(1~4 means optocouplers channel 1~4, 5~8 mean relays channel 1~4).

Example: 123456(G7MBO1:)

◆ MODBUS logic 0 output

Please refer to 4.1.4.2 MODBUS logic 0 output.

Command: S7MBZy:x

Explanation: set MODBUS logic 0 output.

Parameter: y range 1~8,corresponding to digital input channel(1~4 means optocouplers channel 1~4, 5~8 mean relay channel 1~4).

optocouplers: x range 0~5，0 means low level，1 means high level. 2 means rising edge, 3 means falling edge, 4 means both edge. 5 means square wave.

relays: x range 0~1， 0 means disconnet， 1 means connect.

Example: 123456(S7MBZ1:0)

Command: G7MBZy:

Explanation: get MODBUS logic 0 output.

Parameter: y range 1~8, corresponding to digital input channel(1~4 mean optocouplers channel 1~4, 5~8 mean relay channel 1~4).

Example: 123456(G7MBZ1:)

◆ MODBUS logic 1 square-wave cycle

Please refer to 4.1.4.2 MODBUS logic 1 square-wave cycle.

Command: S7MBOFy:x

Explanation: set MODBUS logic 1 square wave cycle.

Parameter: y range 1~4, corresponding to digital input channel(1~4 mean optocouplers channel 1~4). x range 0-4294967295.

Example: 123456(S7MBOF1:0)

Command: G7MBOFy:

Explanation: get MODBUS logic 1 square wave cycle.

Parameter: y range 1~4, corresponding to digital input channel(1~4 mean optocouplers channel 1~4).

Example: 123456(G7MBOF1:)

◆ MODBUS logic 0 square-wave cycle

Please refer to 4.1.4.2 MODBUS logic 0 square-wave cycle.

Command: S7MBZFy:x

Explanation: set MODBUS logic 0 square wave cycle.

Parameter: y range 1~4, corresponding to digital input channel(1~4 corresponding to optocouplers channel 1~4). x range 0-4294967295.

Example: 123456(S7MBZF1:0)

Command: G7MBZFy:

Explanation: get MODBUS logic 0 square wave cycle.

Parameter: y range 1~4, corresponding to digital input channel(1~4 corresponding to optocouplers channel 1~4).

Example: 123456(G7MBZF1:)

◆ Default output voltage

Please refer to 4.1.4.2 Default output voltage.

Command: S7DFy:x

Explanation: set default output voltage.

Parameter: y range 1~8, corresponding to digital input channel(1~4 corresponding to optocouplers channel 1~4, 5~8 corresponding to relay channel 1~4).

optocouplers: x range 0~1，0 mean low level，1 mean high level.

relays: x range 0~1，0 mean disconnet，1 mean connect.

Example: 123456(S7DF1:0)

Command: G7DFy:

Explanation: get default output voltage.

Parameter: y range 1~8, corresponding to digital input channel(1~4 corresponding to optocouplers channel 1~4, 5~8 corresponding to relay channel 1~4).

Example: 123456(G7DF1:)

4.2.5.12 Analog channel settings(S8 series)

◆ Analog input function

Please refer to 4.1.4.3 Analog input function.

Command: S8ENy:x

Explanation: enable or disable analog input.

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0~1，0 means disable，1 means enable.

Example: 123456(S8EN1:0)

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http：//www.fourfaith.com Tel： +86 592-6300326 6300325 6300324 Fax：+86 592-5912735

Command: G8ENy:

Explanation: get analog input function status.

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8EN1:)

◆ Set sensor range

Please refer to 4.1.4.3 Set sensor range.

Command: S8DECy:x

Explanation: set the number of decimal points.

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0-255，the sensor range has the number of decimal points, 0 means no decimal point, 1 mean one decimal point.

Example: 123456(S8DEC1:0)

Command: G8DECy:

Explanation: get the number of decimal points.

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8DECy:)

Command: S8FVy:x

Explanation: set top range(may be negative).

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range -2147483648 to 2147483647，it related to the number of decimal points.

Example: 123456(S8FV1:-5)

Command: G8FVy:

Explanation: get top range(may be negative).

Parameter: y range 1-8, corresponding to analog input channel.

Example: 123456(G8FV1:)

Command: S8ZVy:x

Explanation: set low range(may be negative).

Parameter: y range 1~8, corresponding to analogl input channel. x range -2147483648 to 2147483647，it related to the number of decimal points.

Example: 123456(S8ZV1:-5)

Command: G8ZVy:

Explanation: get low range(There may be negative).

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http：//www.fourfaith.com Tel： +86 592-6300326 6300325 6300324 Fax：+86 592-5912735

Parameter: y range 1-8, it is analogl input channel.

Example: 123456(G8ZV1:)

Command: S8LUPy:x

Explanation: set top alarm limit(may be negative).

Parameter: y range 1~8, corresponding to analog input channel 1~8. x range -2147483648 to 2147483647，it related to the number of decimal points.

Example: 123456(S8LUP1:-5)

Command: G8LUPy:

Explanation: get top alarm limit(may be negative).

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8LUP1:)

Command: S8LLWy:x

Explanation: set low alarm limit(may be negative).

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range -2147483648 to 2147483647，it related to the number of decimal points.

Example: 123456(S8LLW1:-5)

Command: G8LLWy:

Explanation: get low alarm limit(may be negative).

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8LLW1:)

◆ Set sensor voltage or current output

Please refer to 4.1.4.3 Sett sensor voltage or current output.

Command: S8TPy:x

Explanation: set the sensor ouput type(voltage or current).

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0~1，0 means 0-5.12V, 1 means 0-20mA.

Example: 123456(S8TP1:0)

Command: G8TPy:

Explanation: get the sensor ouput type(voltage or current).

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8TP1:)

Command: S8FIVy:x

Add： J1-J3,3rd Floor,No.44,GuanRiRoad,SoftWare Park,XiaMen .361008.China
http：//www.fourfaith.com Tel： +86 592-6300326 6300325 6300324 Fax：+86 592-5912735

Explanation: set the top range of sensor outputs voltage or current value.

Parameter: y range 1~8,corresponding to analogl input channel 1~8. x range 0-4294967295，it related to the sensor ouput type.

Example: 123456(S8FIV1:1000000)(1V)

Command: G8FIVy:

Explanation: get the top range of sensor outputs voltage or current value.

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8FIVy:)

Command: S8ZIVy:x

Explanation: set the low range of sensor outputs voltage or current value.

Parameter: y range 1~8, it is analogl input channel 1~8. x range 0-4294967295，it related to the sensor ouput type.

Example: 123456(S8ZIV1:1000000)(1V)

Command: G8ZIVy:

Explanation: get the low range of sensor outputs voltage or current value.

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8ZIVy:)

◆ MODBUS function

Please refer to 4.1.4.3 MODBUS function.

Command: S8MBENy:x

Explanation: enable or disable MODBUS function.

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0~1，0 means disable，1 means enable.

Example: 123456(S8MBEN1:0)

Command: G8MBENy:

Explanation: get the MODBUS function status.

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8MBEN1:)

◆ Acqisition function

Please refer to 4.1.4.3 acqisition function.

Command: S8GENy:x

Explanation: enable or disable acquisition function.

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0~1，0 mean disable，1 means enable.

Example: 123456(S8GEN1:0)

Command: G8GENy:

Explanation: get the acquisition function status.

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8GEN1:)

◆ Acqisition interval

Please refer to 4.1.4.3 acqisition interval.

Command: S8GTMy:x

Explanation: set acquisition interval.

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0-4294967295，0 means 10ms.

Example: 123456(S8GTM1:0)

Command: G8GTMy:

Explanation: get acquisition interval.

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8GTM1:)

◆ Alarm function

Please refer to 4.1.4.3 Alarm function.

Command: S8LENy:x

Explanation: enable or disable alarm function.

Parameter: y range 1~8, corresponding to analog input channel 1~8. x range 0~1，0 mean disable, 1 means enable.

Example: 123456(S8LEN1:0)

Command: G8LENy:

Explanation: get the alarm function status.

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8LEN1:)

◆ Alarm trigger condition

Please refer to 4.1.4.3 Alarm trigger condition.

Command: S8LOPy:x

Explanation: set alarm tigger condition.

Parameter: y range 1~8, corresponding to analog input channel 1~8.

x range 0-11

0: it < low alarm limit

1: it <= low alarm limit

2: it > top alarm limit

3: it >= top alarm limit

4: low alarm limit < it < top alarm limit

5: low alarm limit <= it < top alarm limit

6: low l alarm limit < it <= top alarm limit

7: low alarm limit<= it <= top alarm limit

8: it < low alarm limit or it > top alarm limit

9: it <= low alarm limit or it > top alarm limit

10: mean it < low alarm limint or it >= top alarm limit

11: mean it <= low alarm limit or it >= top alarm limit.

Example: 123456(S8LOP1:0)

Command: G8LOPy:

Explanation: get alarm tigger condition.

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8LOP1:)

◆ Alarm content

Please refer to 4.1.4.3 Alarm content.

Command: S8LTXy:xxx

Explanation: set alarm content.

Parameter: y range 1~8, corresponding to analog input channel 1~8. xxx mean alarm content(<=140 bytes).

Example: 123456(S8LTX1:adc ain1 alarm)

Command: G8LTXy:

Explanation: get alarm content.

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8LTX1:)

◆ Alarm phone number

Please refer to 4.1.4.3 Alarm phone number.

Command: S8LANOy:xxx

Explanation: add alarm phone number.

Parameter: y range 1~8, corresponding to analog input channel 1~8. xxx mean alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: 123456(S8LANO1:13912345678,13812345678)

Command: S8LSNOy:xxx

Explanation: set alarm phone number, it replace the old phone numbers with the new setting .

Parameter: y range 1~8, corresponding to analog input channel 1~8. xxx mean alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: 123456(S8LSNO1:13912345678,13812345678)

Command: S8LDNOy:xxx

Explanation: delete alarm phone number, it delets alarm phone number that is the same as this parameter.

Parameter: y range 1~8, corresponding to analog input channel 1~8. xxx mean alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7).

Example: 123456(S8LDNO1:13912345678,13812345678)

Command: G8LNOy:

Explanation: get alarm phone number.

Parameter: y range 1~8,corresponding to analog input channel 1~8.

Example: 123456(G8LNO1:)

◆ Active report function

Please refer to 4.1.4.3 Active report function.

Command: S8RPENy:x

Explanation:enable or disable active report function.

Parameter: y range 1~8, corresponding to analogl input channel 1~8. x range 0~1，0 mean disable，1 means enable.

Example: 123456(S8RPEN1:0)

Command: G8RPENy:

Explanation: get the active report function status.

Parameter: y range 1~8, corresponding to analogl input channel 1~8.

Example: 123456(G8RPEN1:)

4.2.5.13 Counter settings(S9 series)

◆ Counter function

Please refer to 4.1.4.4 Counter function.

Command: S9EN:x

Explanation: enable or disable counter function.

Parameter: x range 0~1，0 means disable，1 means enable.

Example: 123456(S9EN:0)

Command: G9EN:

Explanation: get the counter function status.

Parameter: none.

Example: 123456(G9EN:)

◆ Counter work mode

Please refer to 4.1.4.4 Counter work mode.

Command: S9WV:x

Explanation: set counter work mode.

Parameter: x range 0~2，0 means rising edge，1 means falling edge, 2 means both edge.

Example: 123456(S9WV:0)

Command: G9WV:

Explanation: get counter work mode.

Parameter: none.

Example: 123456(G9WV:)

◆ Counter initial value

Please refer to 4.1.4.4 Counter initial value.

Command: S9V:x
Explanation: set counter initial value.
Parameter: x range0~4294967295.
Example: 123456(S9V:0)

Command: G9V:
Explanation: get counter initial value..
Parameter: none.
Example: 123456(G9V:)

◆ Alarm function

Please refer to 4.1.4.4 Alarm function.

Command: S9LEN:x
Explanation: enable or disable alarm function.
Parameter: x range 0~1，0 means disable, 1 means enable.
Example: 123456(S9LEN:0)

Command: G9EN:
Explanation: get alarm function status.
Parameter: none.
Example: 123456(G9EN:)

◆ Alarm content

Please refer to 4.1.4.4 Alarm content.

Command: S9LTX:xxx
Explanation: set alarm content.
Parameter: xxx means alarm content(<=140 bytes)..
Example: 123456(S9LTX:couter alarm)

Command: G9LTX:
Explanation: get alarm content.
Parameter: none.

Example: 123456(G9LTX:)

◆ Alarm phone number

Please refer to 4.1.4.4 Alarm phone number.

Command: S9LANO:xxx

Explanation: add counter alarm phone number.

Parameter: xxx mean counter alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7)..

Example: 123456(S9LANO:13912345678,13812345678)

Command: S9LSNO:xxx

Explanation: set counter alarm phone number, it replace the old with the new setting.

Parameter: xxx mean counter alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7)..

Example: 123456(S9LSNO:13912345678,13812345678)

Command: S9LDNO:xxx

Explanation: delete alarm phone number, it delets alarm phone number that is the same as this parameter.

Parameter: xxx mean counter alarm phone number(can configure multiple phone numbers, the numbers are separated by comma,total numbers should not exceed 7)..

Example: 123456(S9LDNO:13912345678,13812345678)

Command: G9LNO:

Explanation:get counter alarm phone number.

Parameter: none.

Example: 123456(G9LNO:)

◆ Alarm upper limit

Please refer to 4.1.4.4 Alarm upperlimit.

Command: S9LUP:x

Explanation: set alarm upper limit.

Parameter: x range0~4294967295.

Example: 123456(S9LUP:0)

Command: G9LUP:

Explanation: get alarm upper limit.

Parameter: none.

Example: 123456(G9LUP:)

4.3 Setting for RTU extended protocol

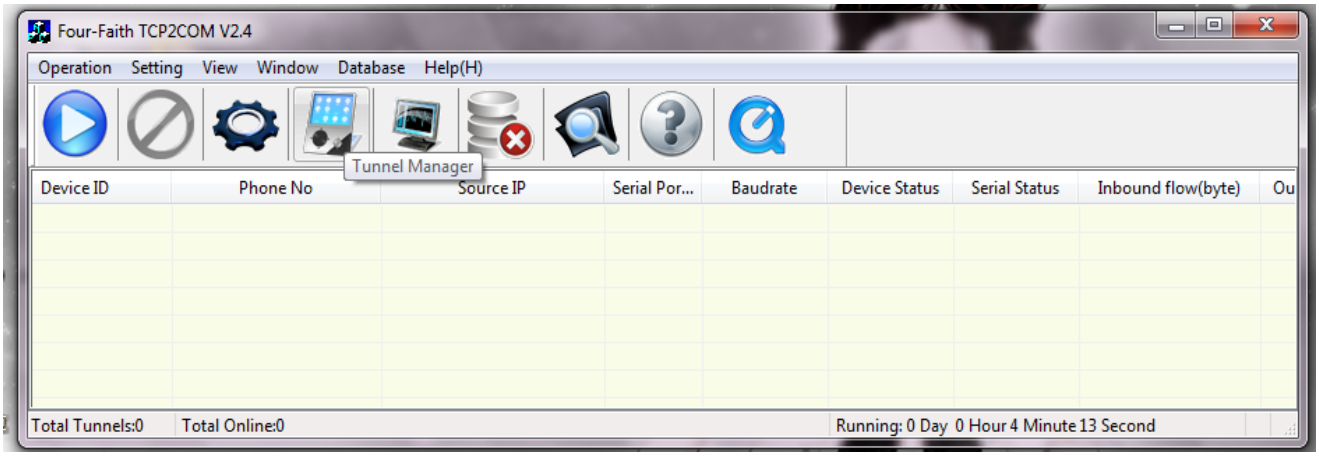
RTU extended protocol configuration, please refer to 5.2.10 Remote configure.

Chapter 5 Software Manual

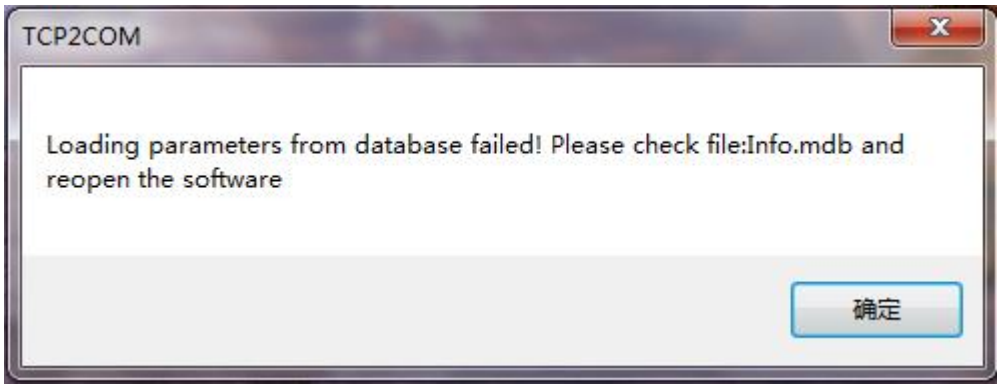
5.1 TCP2COM manual

TCP2COM software can used to transfer data which receive from RTU to a specified virtual serial port,and it can also transfer data which send by virtual port to RTU.

5.1.1 Open software



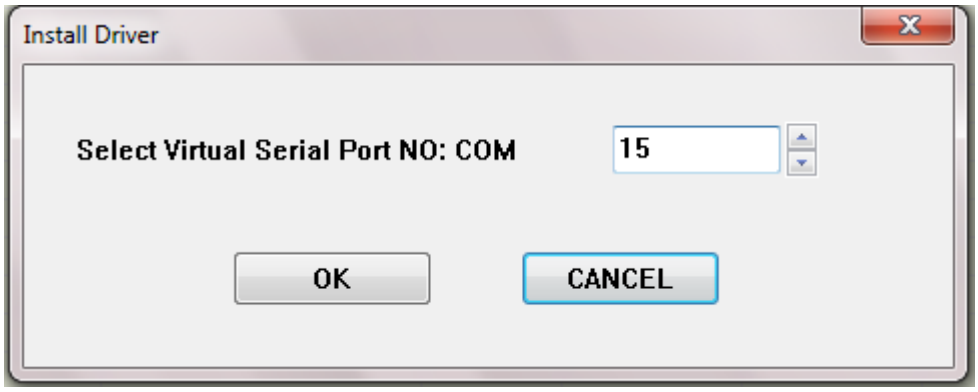
If it shows as below,please check current software path exist Info.mdb,if exists that means there is something wrong with Info.mdb,Please open Info.mdb by using Access ,and choose menu "Tools"->" Database practical tools"->" Compression and repair the database" of the Access to repair it.

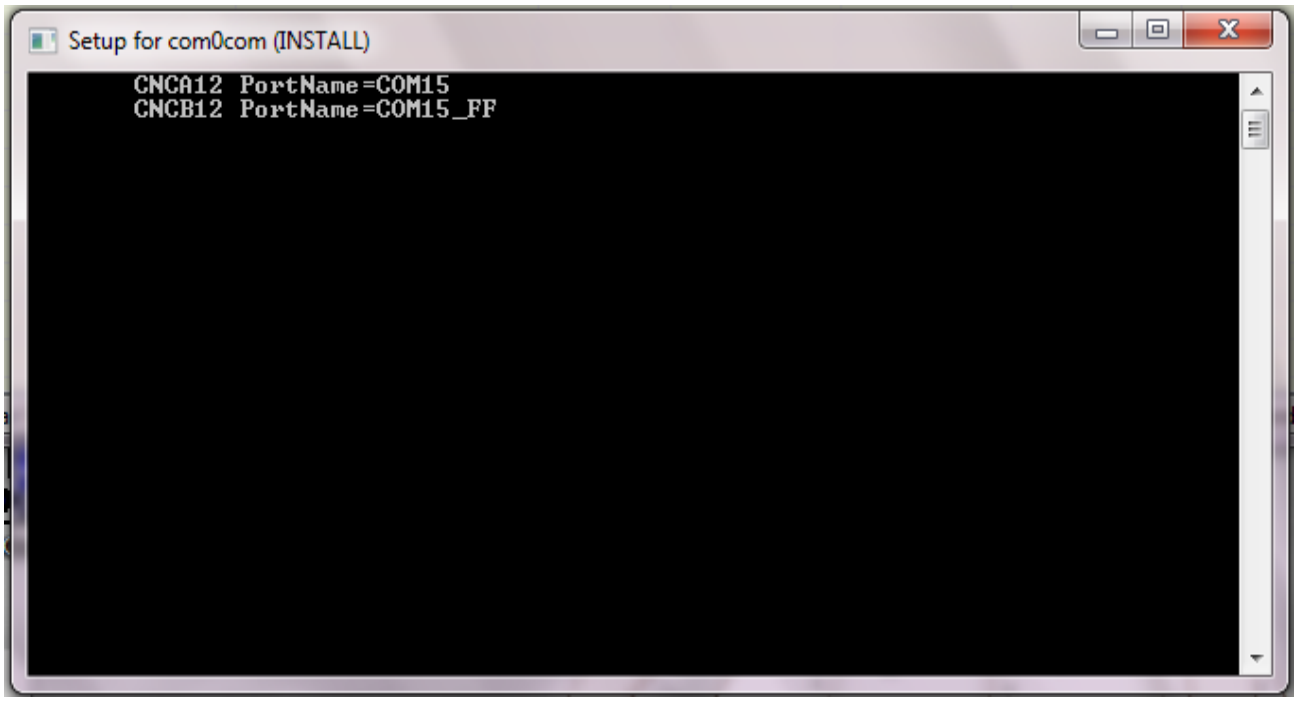


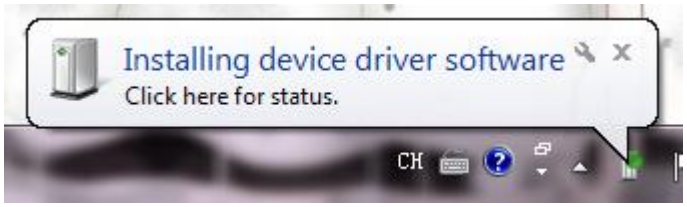
5.1.2 Install the driver

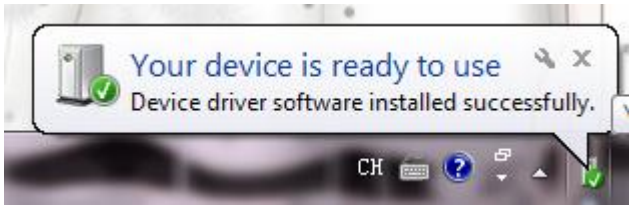
Before using virtual serial port, you must install the driver of virtual serial port with the following steps :

Click Menu “Operation”,choose the item “Add virtual port”,it will pop up the dialog which you can set the virtual serial port number ,then click OK to install the driver.
Then the PC will install device driver,and show whether the driver has been installed successfully as following.



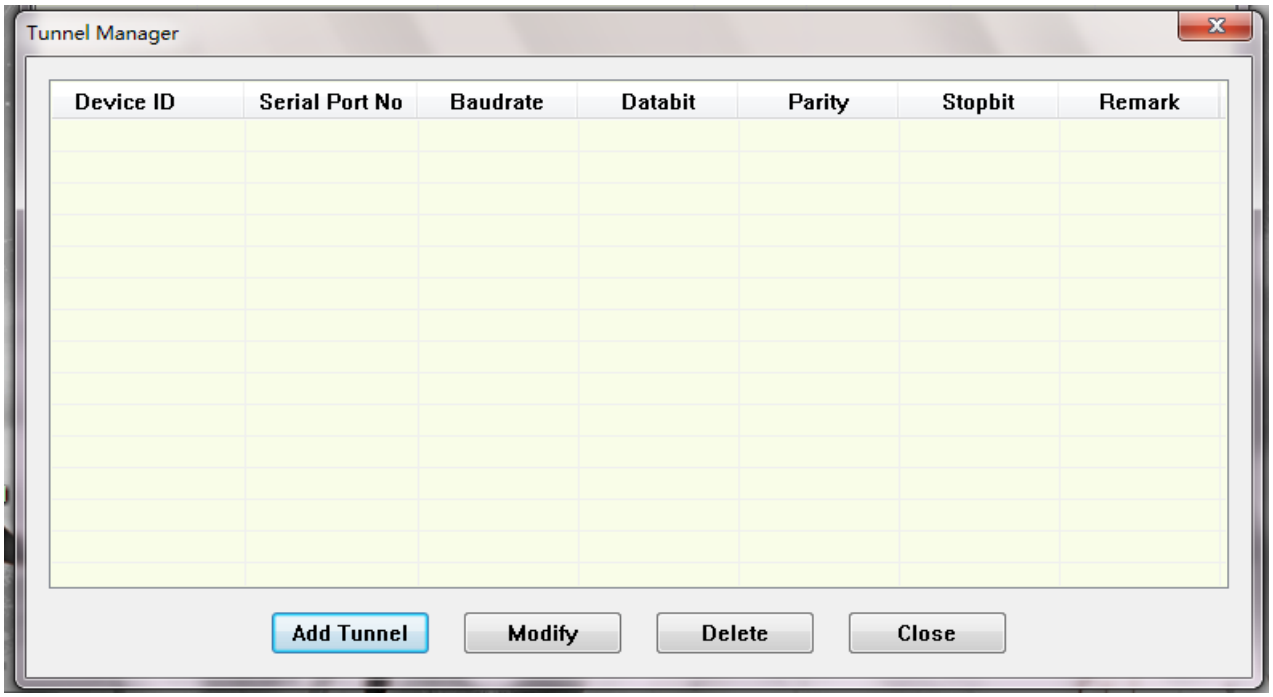




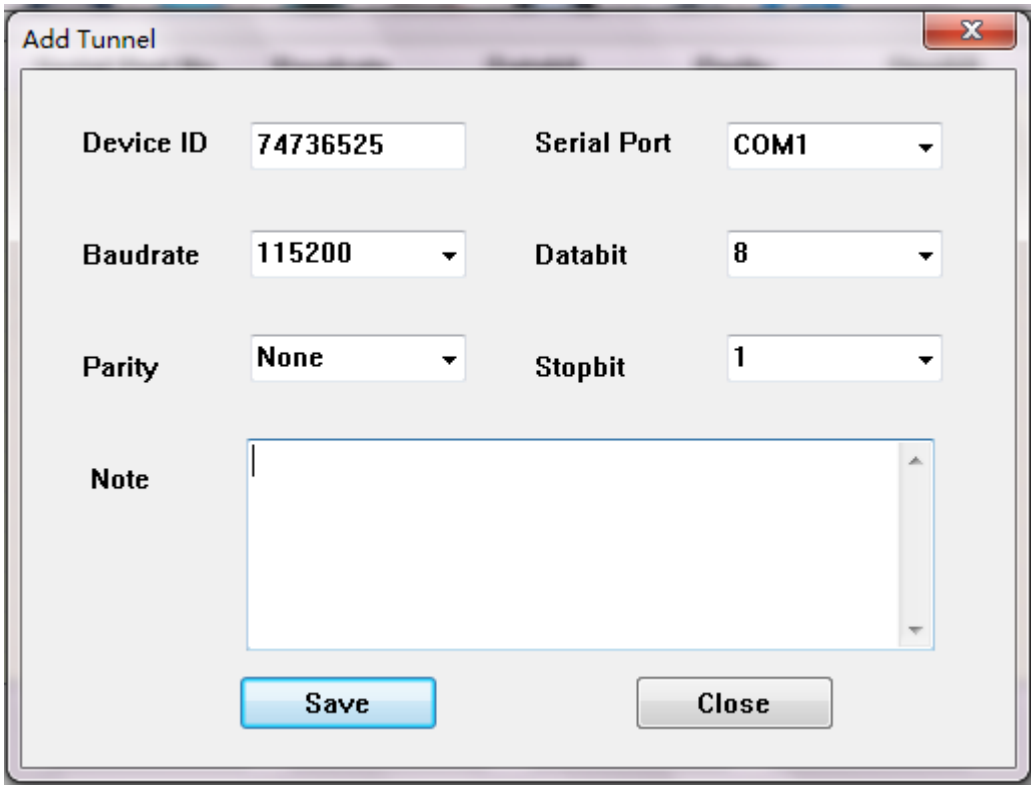


5.1.3 Add virtual serial port

Click button or click “window”-----“Tunnel Manager”as below：



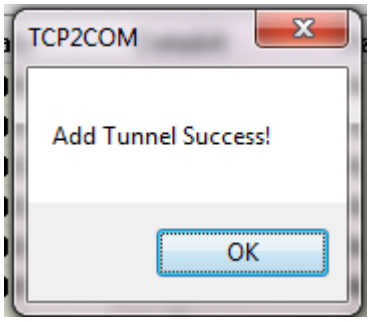
Click “Add Tunnel”,Set the params according to the serial port property.



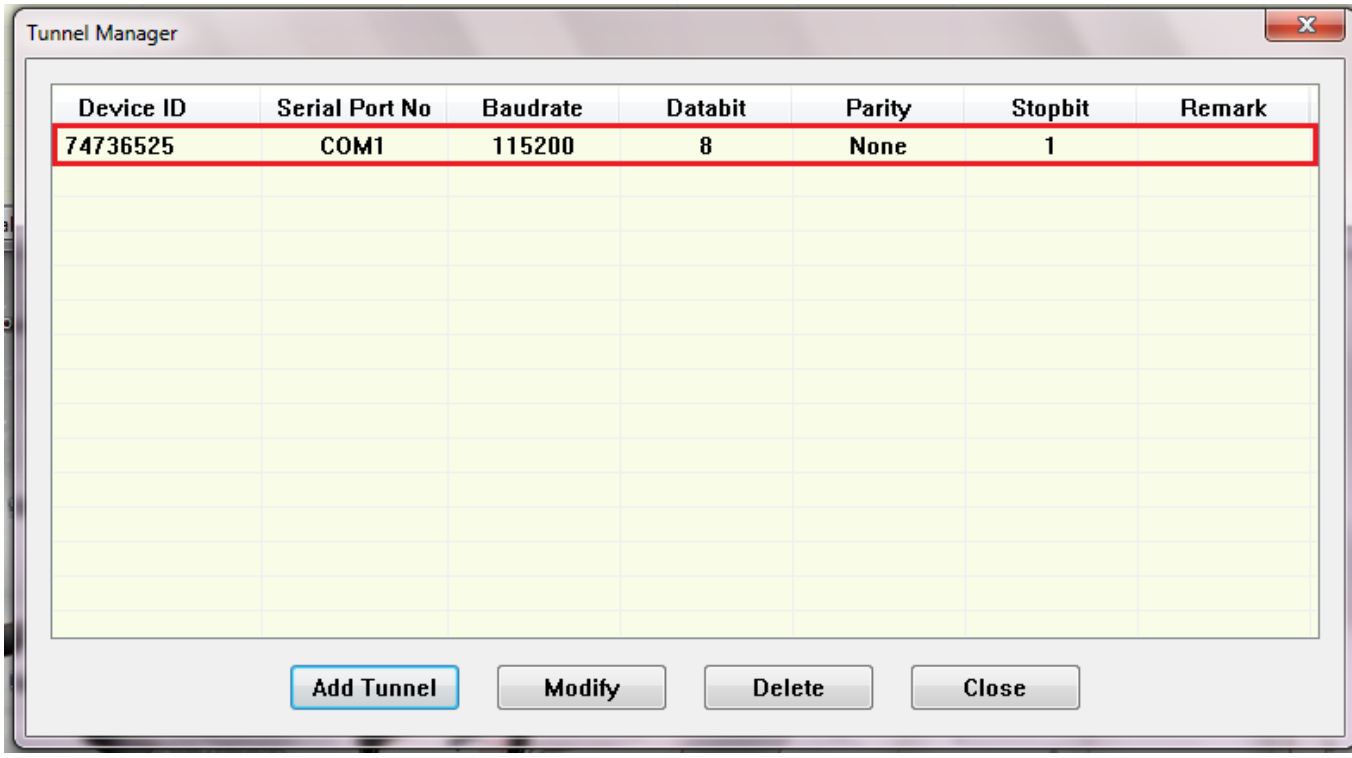
Note：Set the transfer tunnel parameters in this interface，the setting as above set the Device ID of RTU as 74736525,and set the data transfer to COM1,and the data from COM1 will also be transfered to RTU which ID is 74736525.

When finishing setting transfer parameters,click “Save” ,it will show whether the add tunnel

operation is success.



If add tunnel success,it will show transfer parameters on Tunnel Manger interface as following：



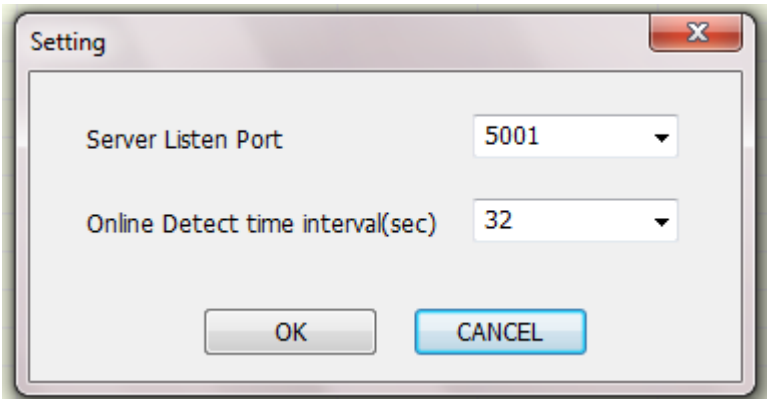
Note：

A、Different ID of RTU can transfer to one same serial port,but it can not transfer one ID of RTU to multiple serial ports.

B、Tunnel Manger can also Modify and Delete the exist tunnel.Current version support 5000 tunnels at most.

5.1.4 Setting the server parameters

Click Menu “Setting” item or click button to open setting dialog：



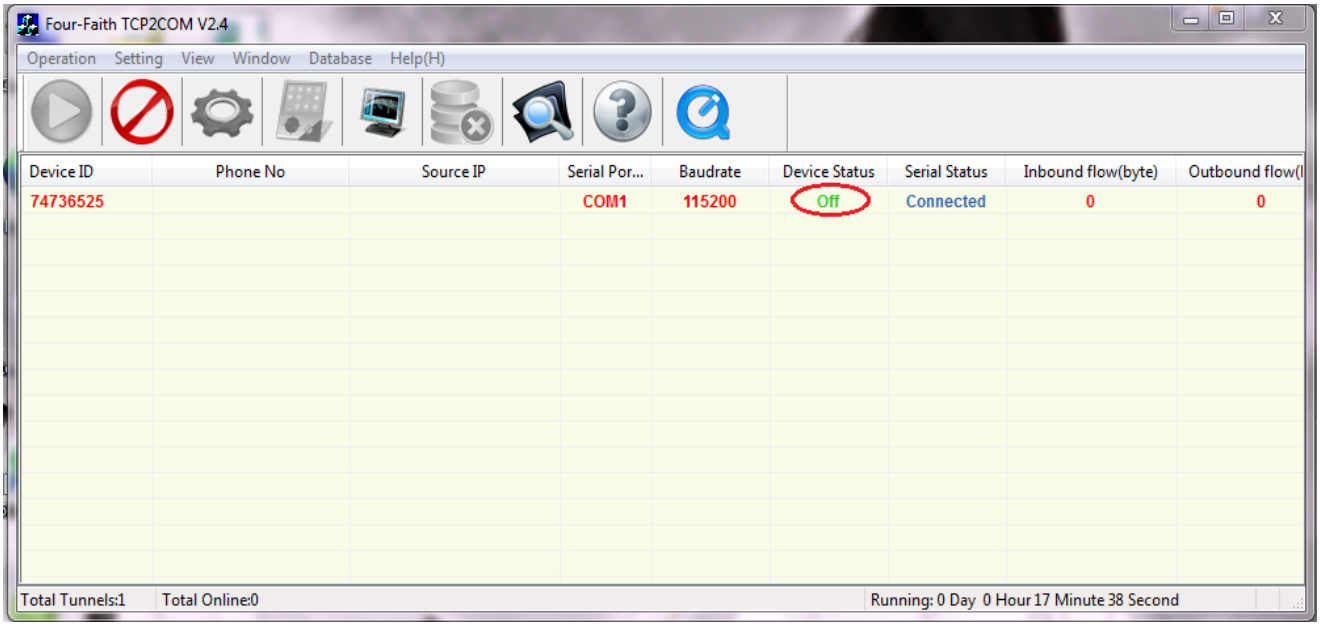
The setting as above set the server listening port as 5001,and set online detect time interval as 32 sec(current system time minus lastest time to receive data ,if the value big than 32,the software will show this RTU has disconnected)

"Tunnel Manager" and "Setting" parameters are saved to database,so the next time to open the software ,you don't need to reset the parameters.

5.1.5 Server connection state

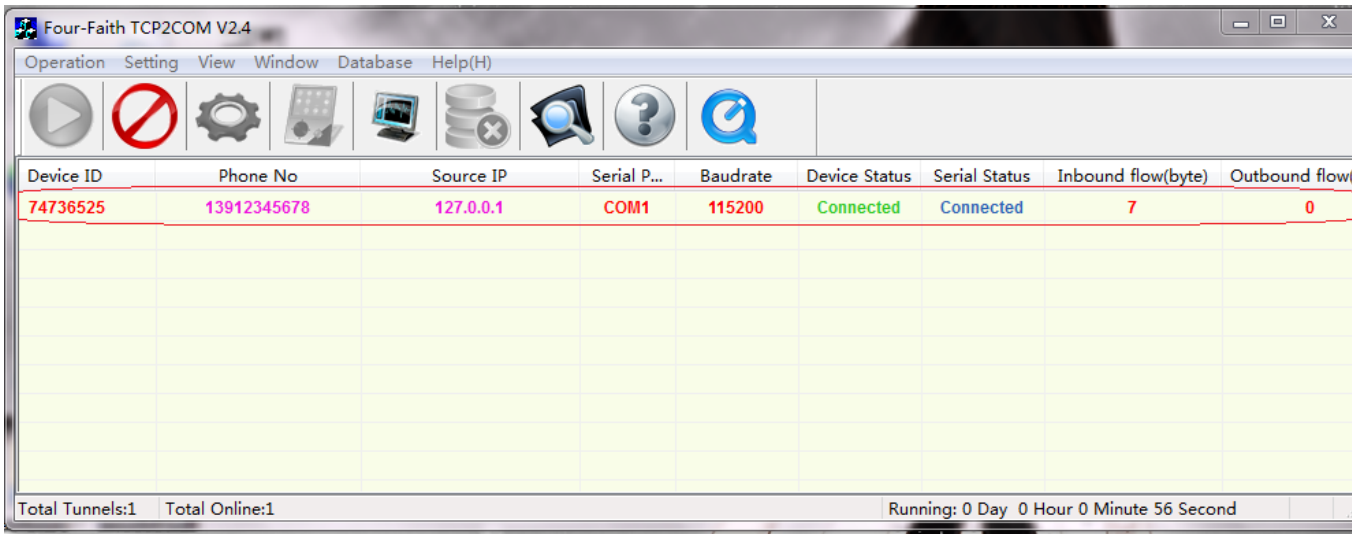
After setting the parameters of tunnel and server,click menu "Operation"->"Start service" or just press button , the software will start to listening and waiting the connection from RTU.

Here is the state of id of 74736574 RTU not connected



After starting service it will show the detail information of all tunnels .

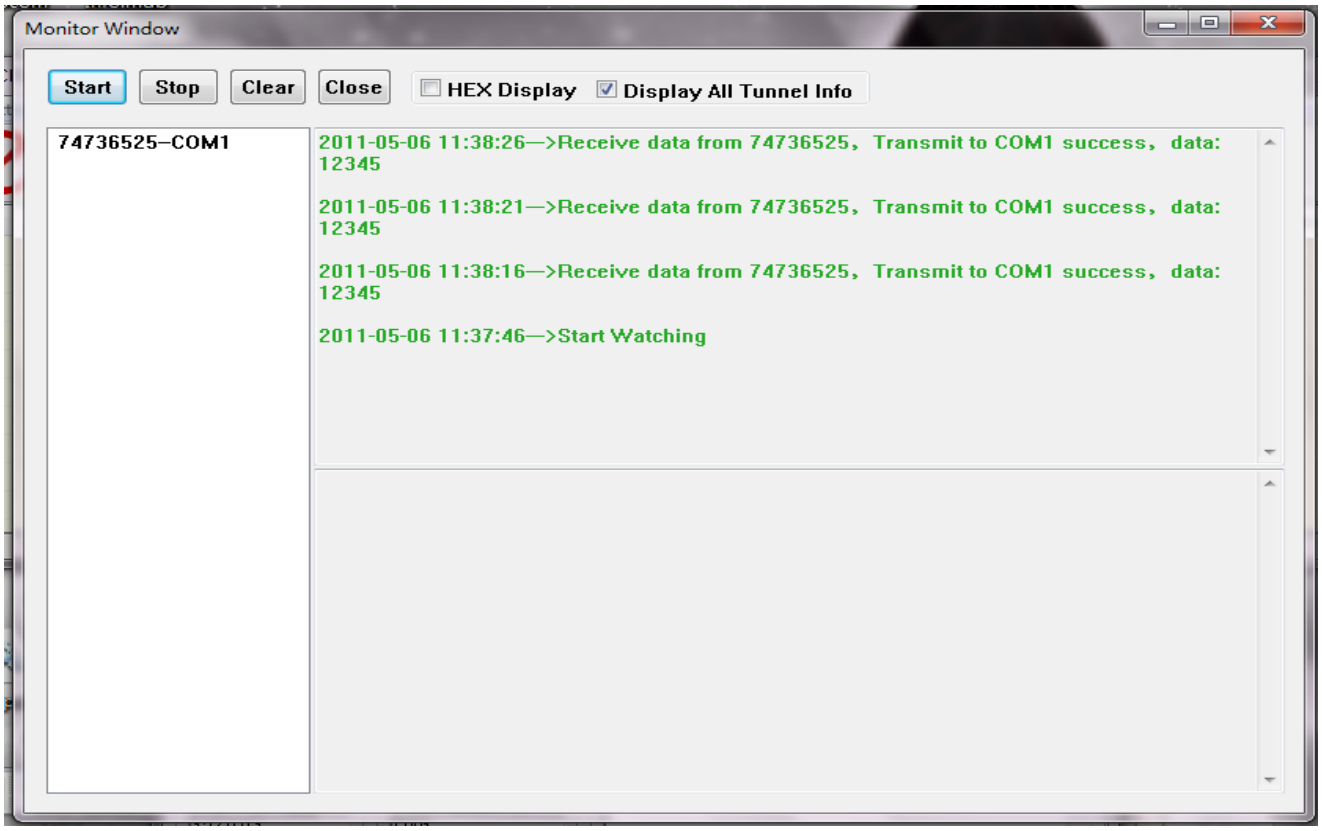
Here is the state of ID 74736525 RTU connected


Four-Faith TCP2COM V2.4
Operation Setting View Window Database Help(H)
Device ID Phone No Source IP Serial P... Baudrate Device Status Serial Status Inbound flow(byte) Outbound flow(
74736525 13912345678 127.0.0.1 COM1 115200 Connected Connected 7 0
Total Tunnels:1 Total Online:1 Running: 0 Day 0 Hour 0 Minute 56 Second

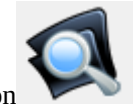
When connection establish success ,the list will show the Phone Number,Source IP,Inbound flow and Outbound flow as above. Click to stop service.

5.1.6 Monitor

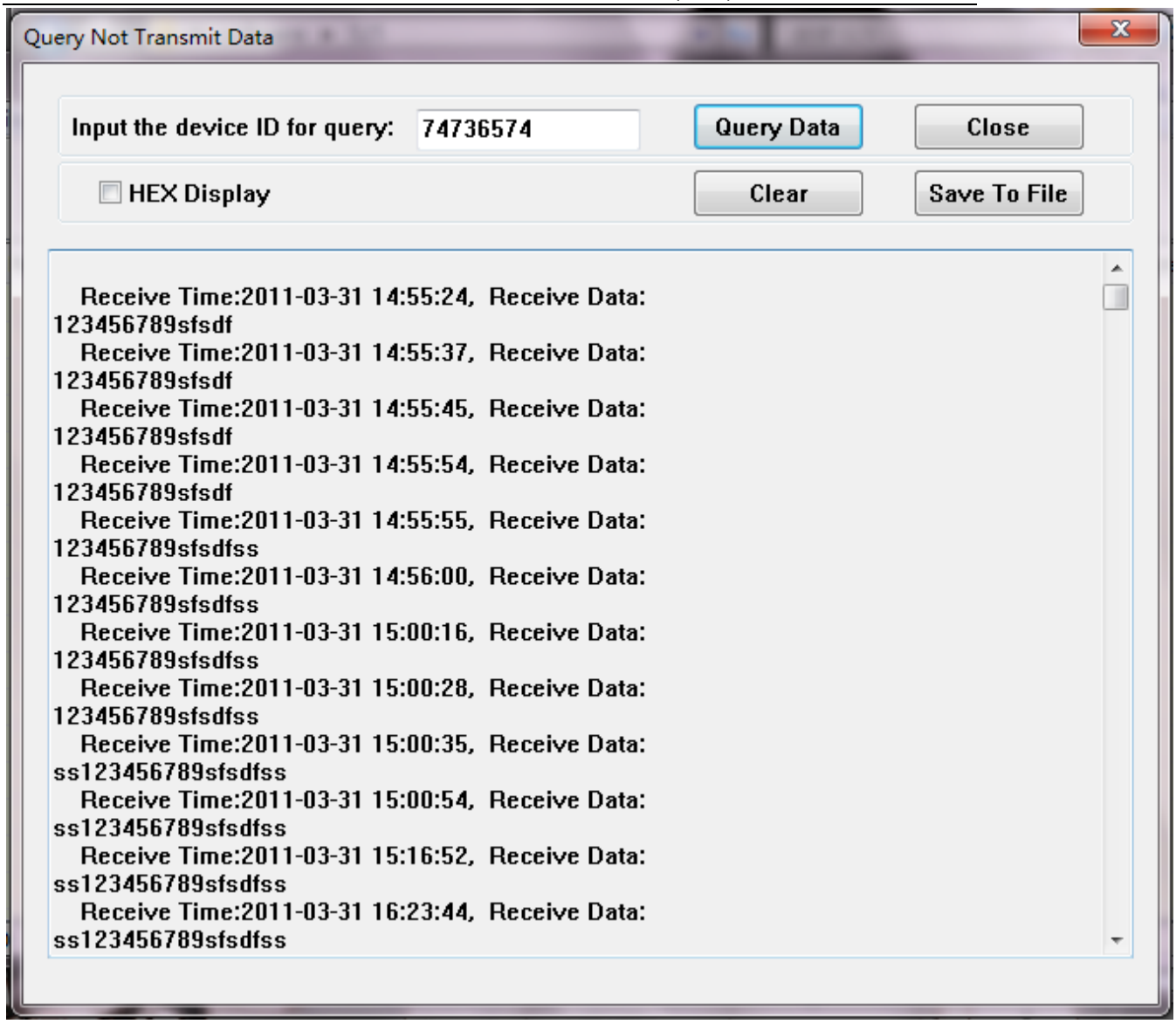
Click Menu “Window”->”Monitor Window”,or press button ， it will show the monitor window which can show outbound and inbound data as following.if you want to monitor one tunnel ,just click the left tree id,it will show the selected id data.


Monitor Window
Start
Stop
Clear
Close
HEX Display
Display All Tunnel Info
74736525--COM1
2011-05-06 11:38:26—>Receive data from 74736525, Transmit to COM1 success, data: 12345
2011-05-06 11:38:21—>Receive data from 74736525, Transmit to COM1 success, data: 12345
2011-05-06 11:38:16—>Receive data from 74736525, Transmit to COM1 success, data: 12345
2011-05-06 11:37:46—>Start Watching

5.1.7 Not transmited data query

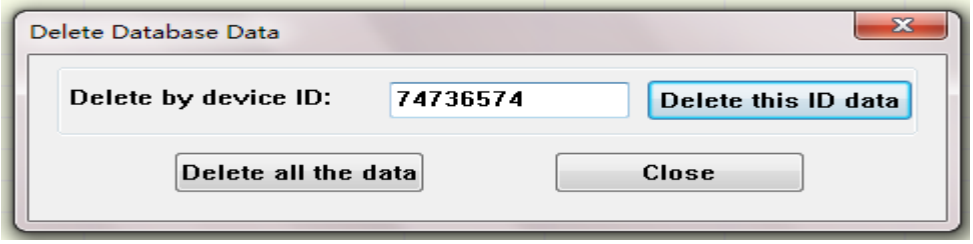
Click menu “Database”->”Query Not Transmited Data”,or press button  ， you can query the data which receive from RTU but transfer to serial port failed as following ，

Also you can just open the database file “Info.mdb”(Access Database file),find table “NotTransData” to query the data.



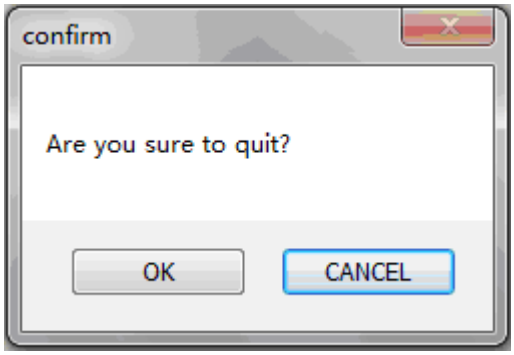
5.1.8 Delete database data

Click menu “Database”->”Delete saved data”,or press button ，you can delete the data by device ID,also you can delete all of the data in database ,the dialog as below



5.1.9 Quit

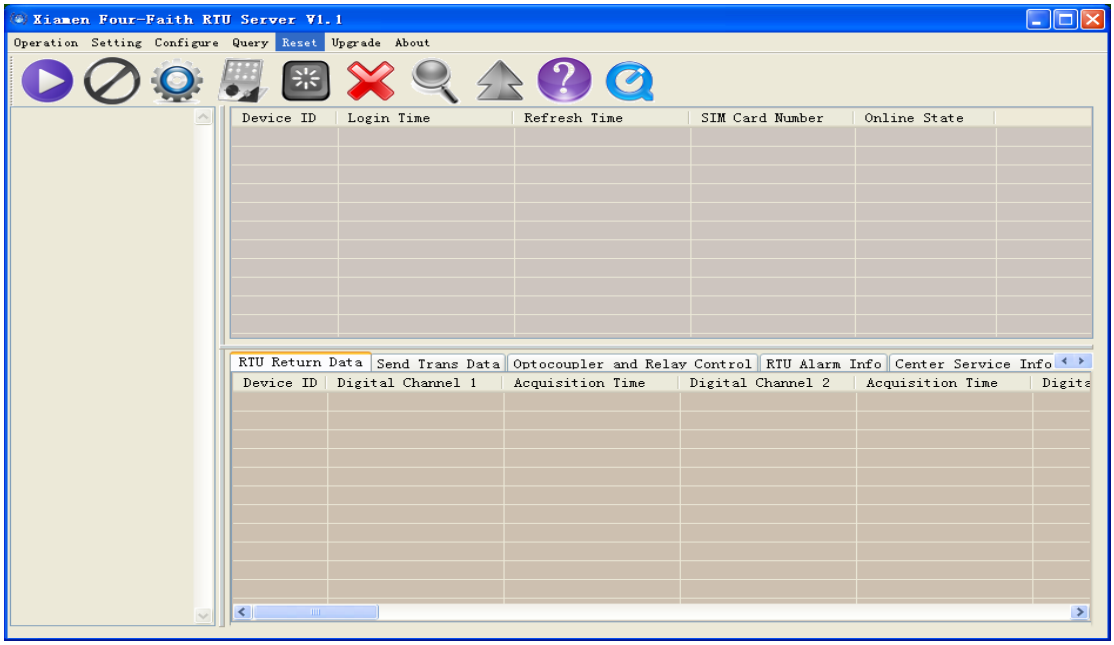
Click menu “Operation”->”Exit”,or press button ,it will show as below



Press OK to quit TCP2COM.

5.2 RTU center service

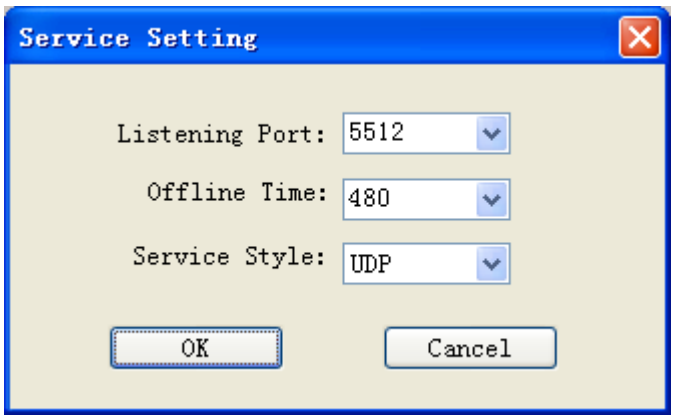
5.2.1 Open software



5.2.2 Service setting

Please open the picture as follow:

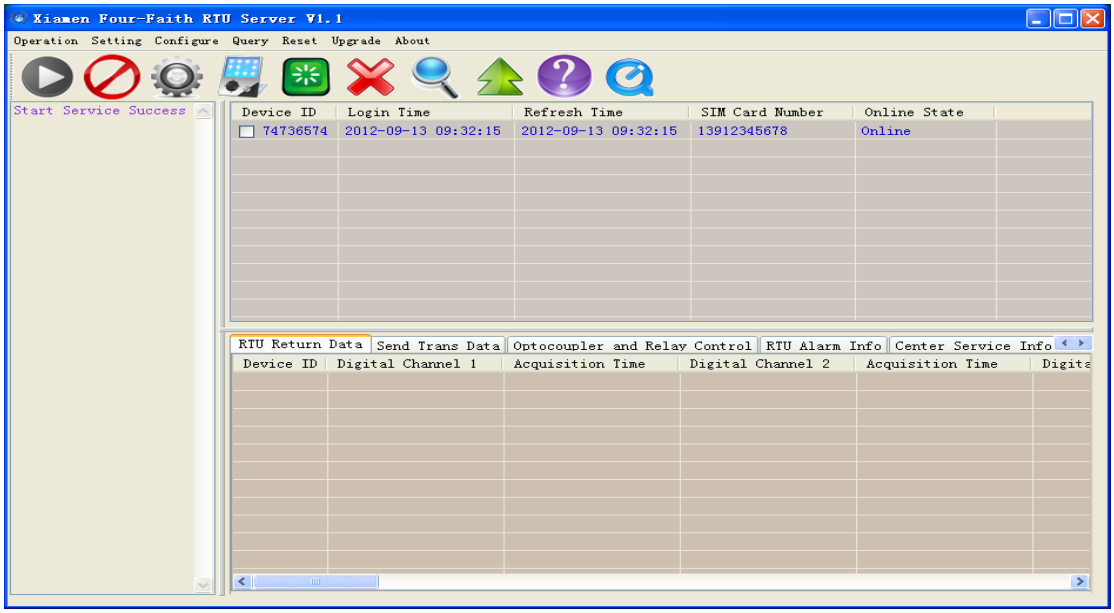
Please click OK and then show the picture as follow:



"Listening Port" is the listening port this software bind.

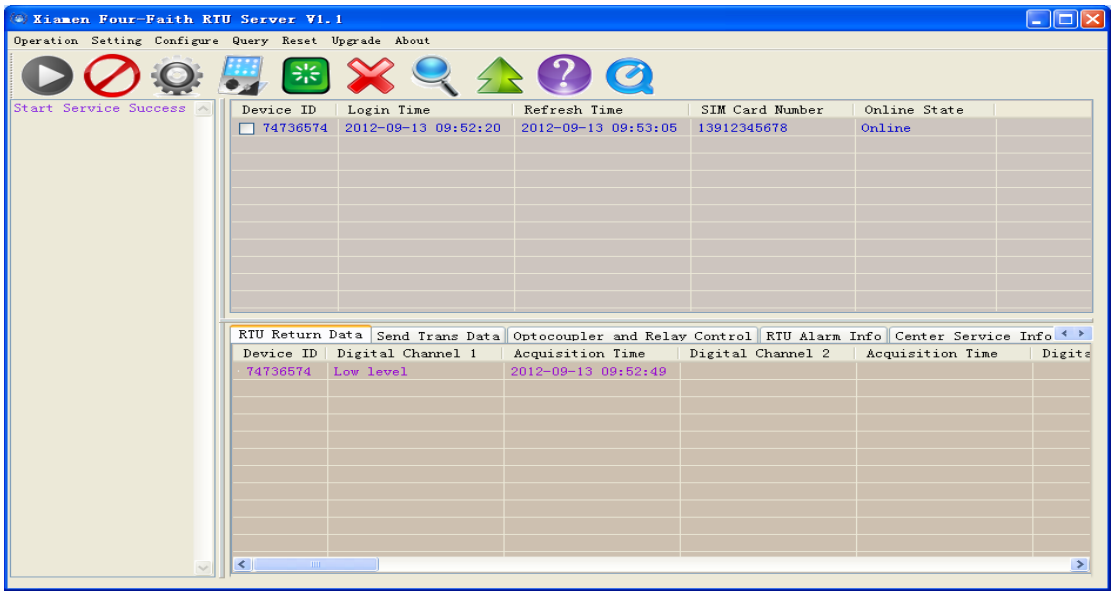
"Offline Time" is interval that center software scan equipment time. "Service Style" is the style of the network. Configuration parameters accord to the actual situation . Please click "OK" after configuration

5.2.3 Start equipment and connect



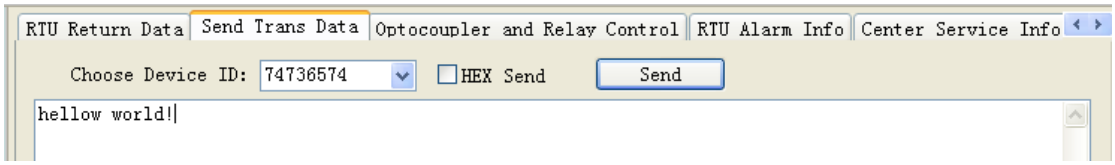
The ID number and SIM number is used to distinguish between different devices. When configure parameters, please be sure to modify these two parametes(These two parameters of the different devices should be different). Specific parameter modification please refer to 4.1.4.7 Device ID and SIM Card No.

5.2.4 View the acquisition data


Xiamen Four-Faith RTU Server V1.1
Operation Setting Configure Query Reset Upgrade About
Start Service Success
Device ID Login Time Refresh Time SIM Card Number Online State
74736574 2012-09-13 09:52:20 2012-09-13 09:53:05 13912345678 Online
RTU Return Data Send Trans Data Optocoupler and Relay Control RTU Alarm Info Center Service Info
Device ID Digital Channel 1 Acquisition Time Digital Channel 2 Acquisition Time
74736574 Low level 2012-09-13 09:52:49

Can view infomationg that includes device ID, acquisition channels , acquisition data and acquisition time as above picture.Should turn on reported switch, please refer to 4.1.4.4 active report function and active report interval and each channel need to enable acquisition function and active report function.

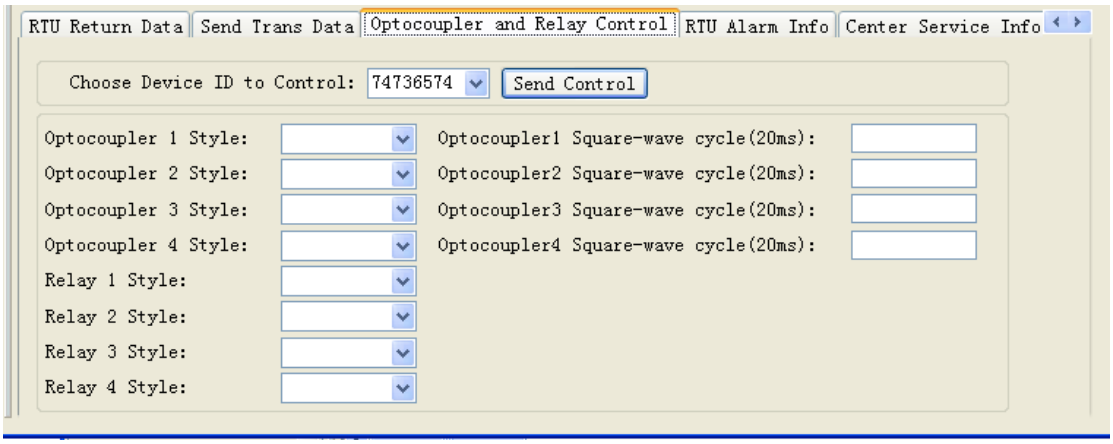
5.2.5 Send data to RS232/RS485



First select a different device ID, second input content in the edit window, then click “Send” button.

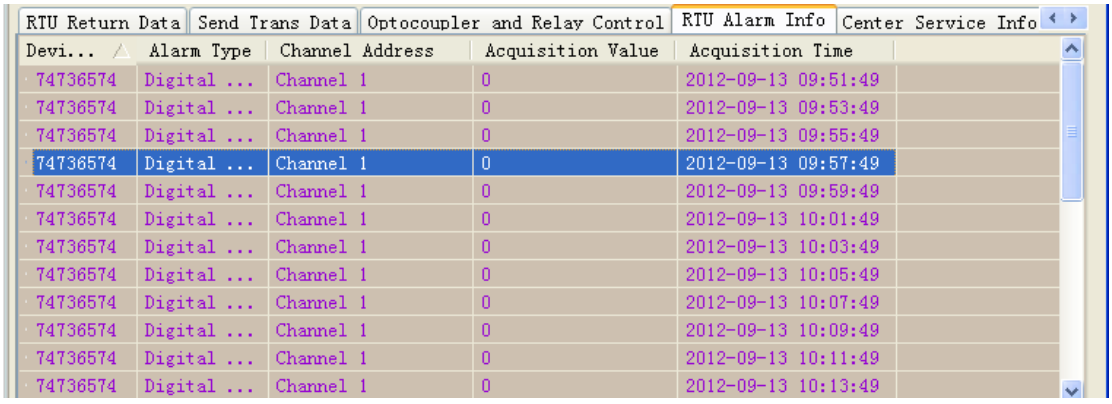
Then, RTU RS232/RS485 will send out this content.

5.2.6 Control optocoupler and relay



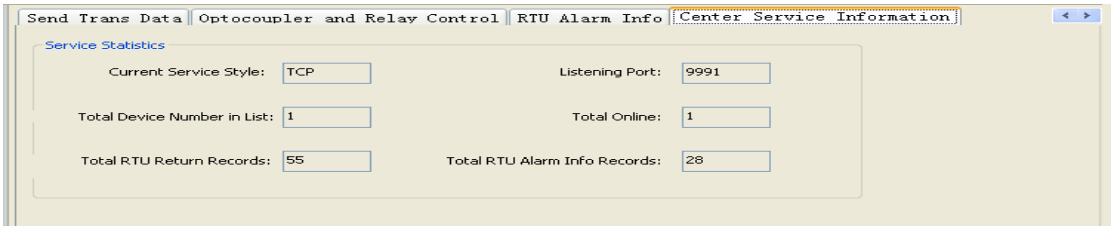
According to the different device ID control different optocoupler and relay. Just click "Send Control" button o complete control. Please set parametes thart refer to 4.1.4.2 Digital output function.

5.2.7 Alarm information


RTU Return Data
Send Trans Data
Optocoupler and Relay Control
RTU Alarm Info
Center Service Info
Devi...
Alarm Type
Channel Address
Acquisition Value
Acquisition Time
74736574 Digital ... Channel 1 0 2012-09-13 09:51:49
74736574 Digital ... Channel 1 0 2012-09-13 09:53:49
74736574 Digital ... Channel 1 0 2012-09-13 09:55:49
74736574 Digital ... Channel 1 0 2012-09-13 09:57:49
74736574 Digital ... Channel 1 0 2012-09-13 09:59:49
74736574 Digital ... Channel 1 0 2012-09-13 10:01:49
74736574 Digital ... Channel 1 0 2012-09-13 10:03:49
74736574 Digital ... Channel 1 0 2012-09-13 10:05:49
74736574 Digital ... Channel 1 0 2012-09-13 10:07:49
74736574 Digital ... Channel 1 0 2012-09-13 10:09:49
74736574 Digital ... Channel 1 0 2012-09-13 10:11:49
74736574 Digital ... Channel 1 0 2012-09-13 10:13:49

Can view different device and diffent alarm information that includes alarm type, channel address, acquisition value and acquisition time.

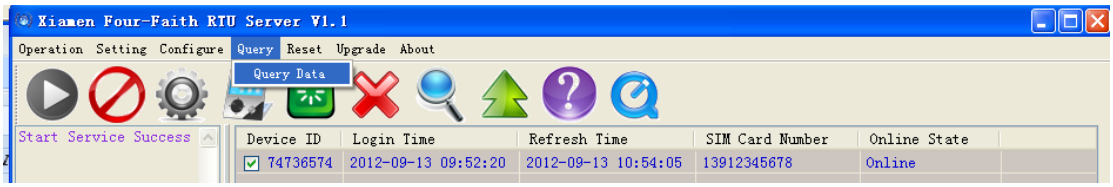
5.2.8 Center service information



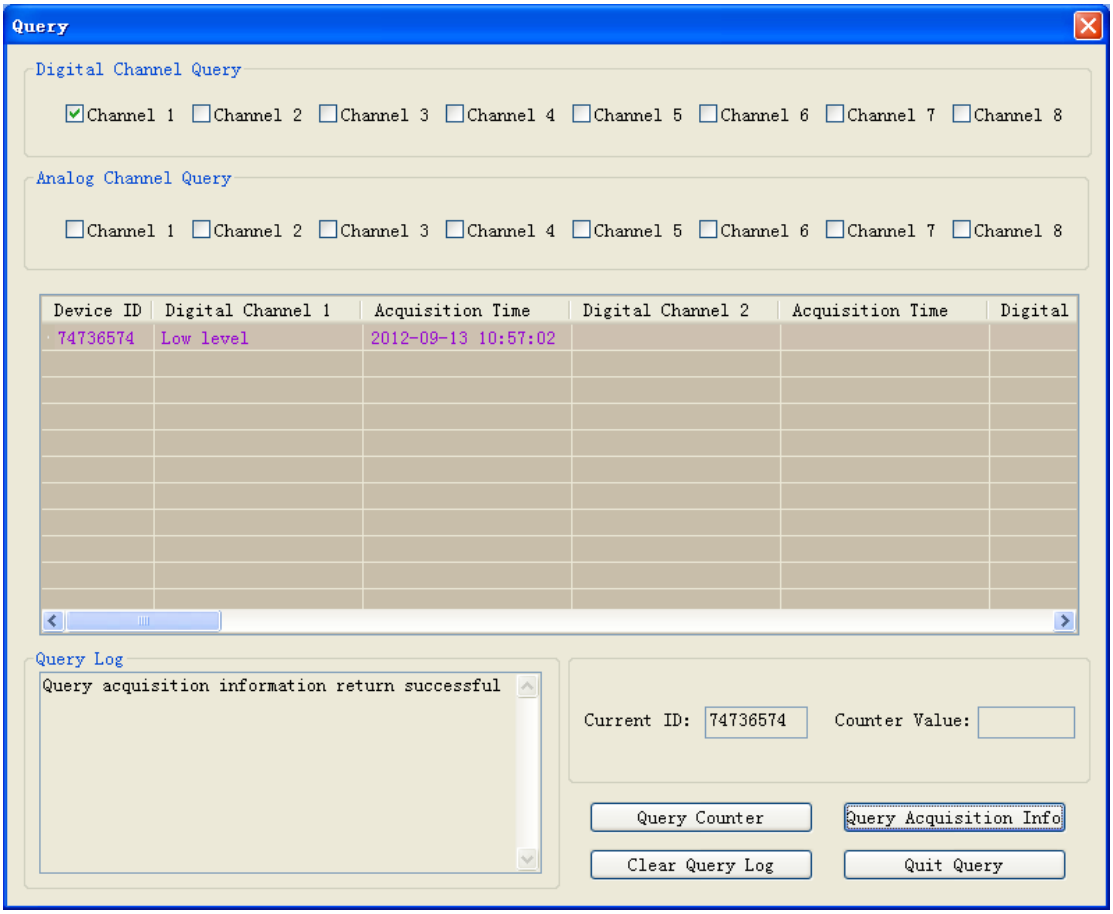
Can view the basic information of the center software.

5.2.9 Query data

Select the device (click the check box in front of the device ID), Please click icon or operate as following picture.


Xiamen Four-Faith RTU Server V1.1
Operation Setting Configure Query Reset Upgrade About
Query Data
Start Service Success
Device ID Login Time Refresh Time SIM Card Number Online State
74736574 2012-09-13 09:52:20 2012-09-13 10:54:05 13912345678 Online

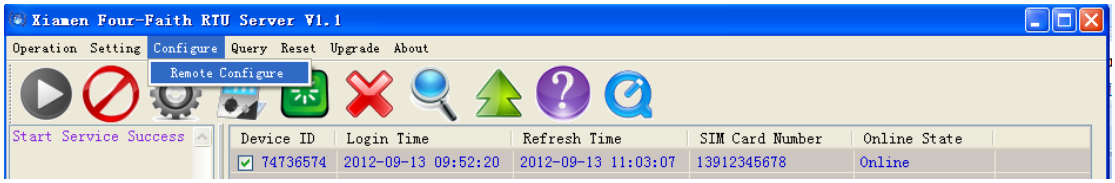
Please click it, then appear as follow picture.


Query
Digital Channel Query
Channel 1 Channel 2 Channel 3 Channel 4 Channel 5 Channel 6 Channel 7 Channel 8
Analog Channel Query
Channel 1 Channel 2 Channel 3 Channel 4 Channel 5 Channel 6 Channel 7 Channel 8
Device ID Digital Channel 1 Acquisition Time Digital Channel 2 Acquisition Time Digital
74736574 Low level 2012-09-13 10:57:02
Query Log
Query acquisition information return successful
Current ID: 74736574
Counter Value:
Query Counter
Query Acquisition Info
Clear Query Log
Quit Query

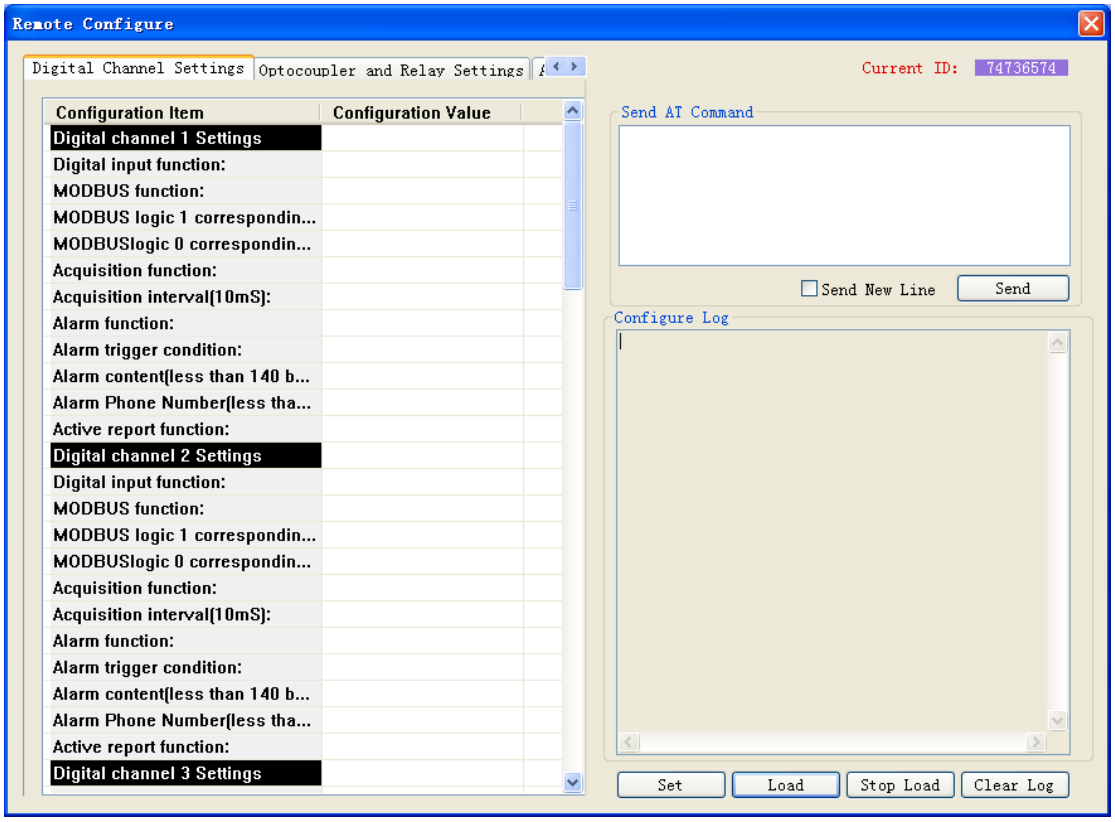
Please select the channel, then click “query Acquisition info” button. It also can query counter value, when click “Query Counter” button.

5.2.10 Remote configure

Select the device (click the check box in front of the device ID), Please click icon or operate as following picture.


Xiamen Four-Faith RTU Server V1.1
Operation Setting Configure Query Reset Upgrade About
Remote Configure
Start Service Success
Device ID Login Time Refresh Time SIM Card Number Online State
74736574 2012-09-13 09:52:20 2012-09-13 11:03:07 13912345678 Online

Please click it, then appear as following picture.

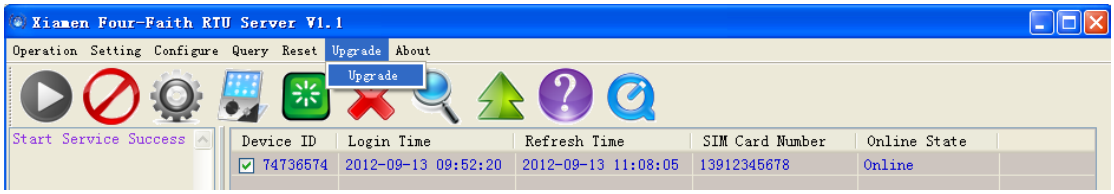


Specific configuration parameters please refer to 4.1.4 Configuration.

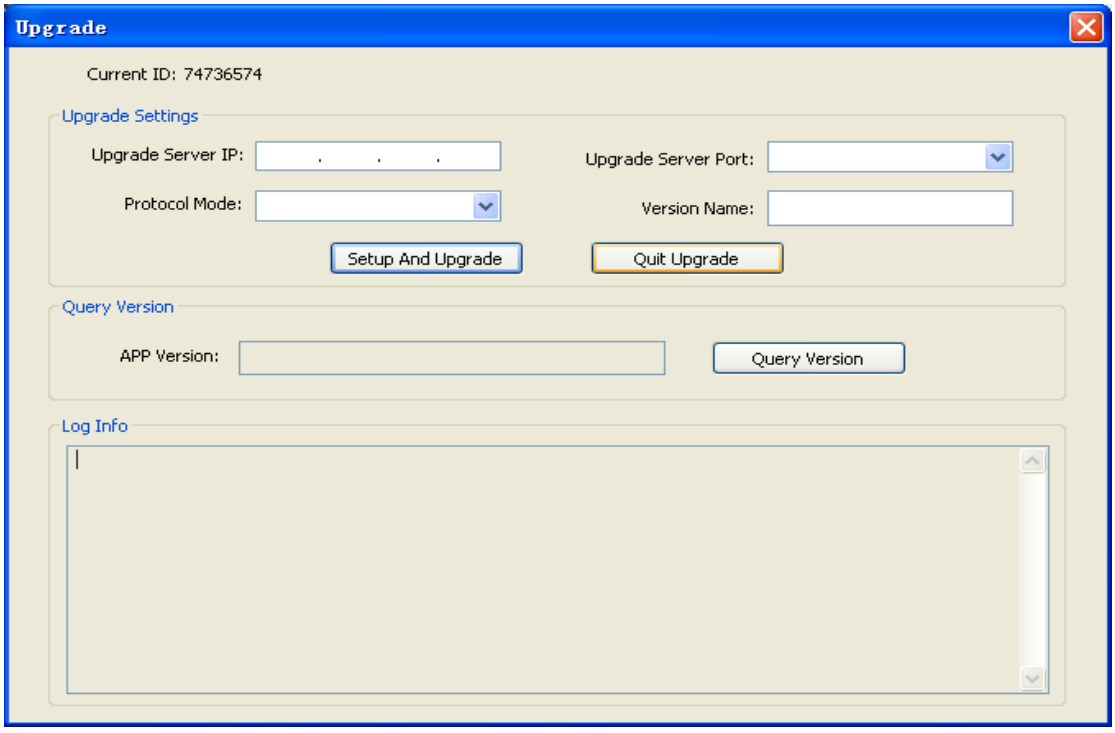
5.2.11 Upgrade

When need to upgrade, please contact the us to get the server address and software version.

Select the device (click the check box in front of the device ID), Please click icon or operate as following picture.



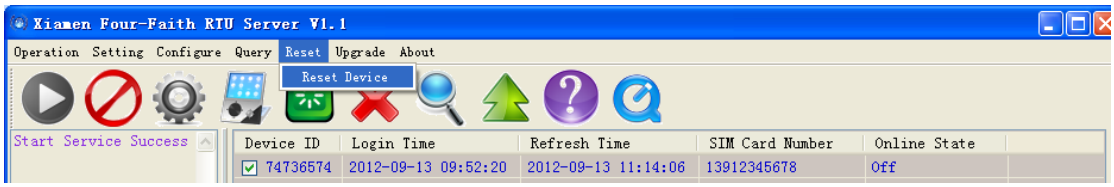
Please click it, then appear as follow picture.



Upgrade Server IP: it means the upgrade firmware in this sever(IP address).
Upgrade Server Port: it means the upgrade server listening port (port number).
Protocol Mode: the upgrade process using TCP or UDP. If select TCP, 5.2.2 service setting need to select TCP. If select UDP, 5.2.2 service setting need to select UDP.
Version Name: the software name that need to upgrade.
App Version: query current software name.
Please click "Setup And Upgrade" button after complete configuration.

5.2.12 Reset device

Select the device (click the check box in front of the device ID), Please click icon or operate as following picture.



If click this button, RTU will reboot.

Appendix

The following steps describe how to make RTU enter configure state with the Windows XP Hyper Terminal.

1. Press “Start”→”Programs”→”Accessories”→”Communications”→”Hyper Terminal”

2. Input connection name, choose “OK”

3. Choose the correct COM port which connect to RTU, choose “OK”

4. Configure the serial port parameters as following, choose “OK”

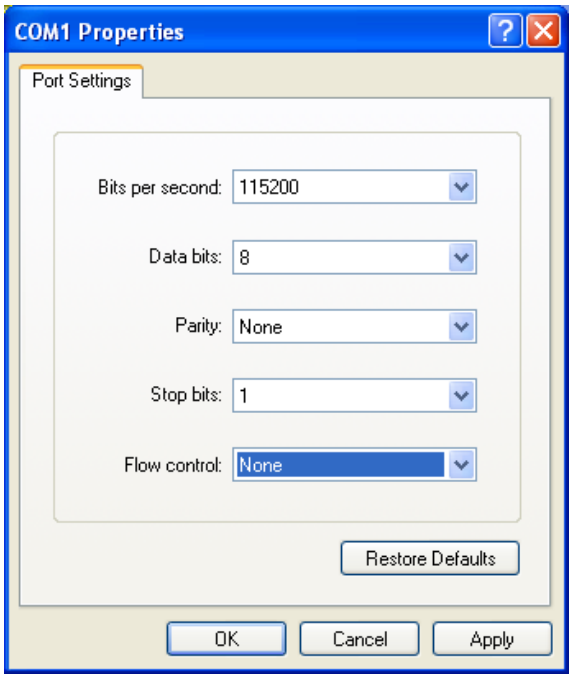
Bits per second: 115200

Data bits: 8

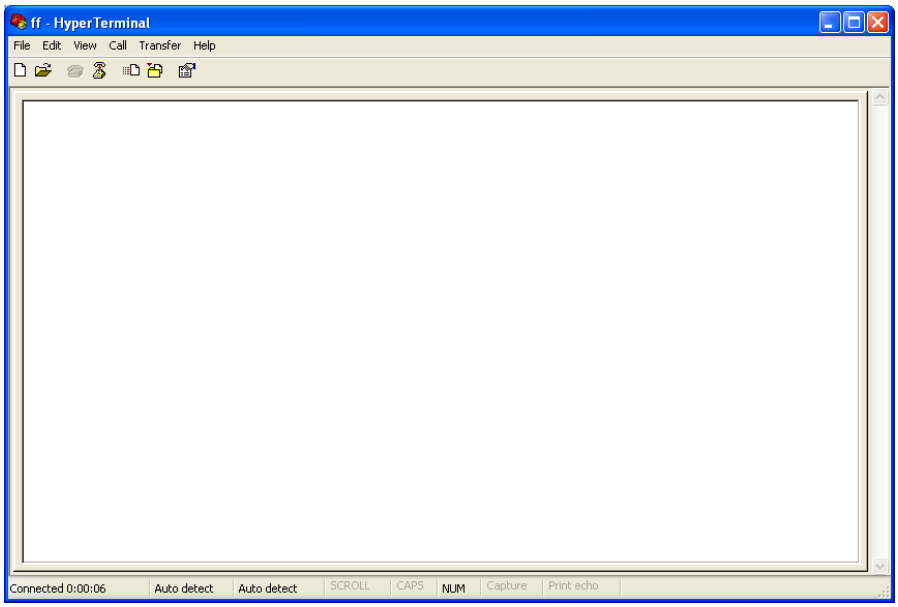
Parity: None

Stop bits: 1

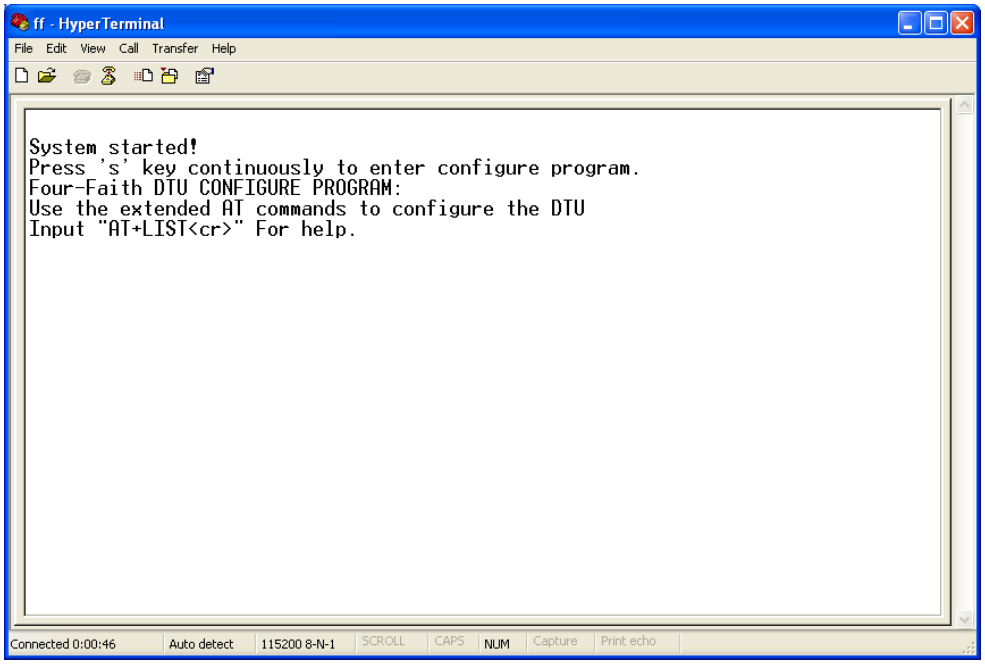
Flow control: None



5. Complete Hyper Terminal operation, It runs as following



6. Re-power RTU, put mouse focus on the Hyper Terminal and press “s” key continuously until RTU enter configure state as following



7. RTU has entered configure state, you can configure the parameters through AT command.